FLIGHT

The AIRCRAFT ENGINEER AND AIRSHIPS

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Founder and Editor: STANLEY SPOONER

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DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

1932.

Dec. 23. Liverpool and Dis. Ae.C., Annual Dance at Mostyn House School.
Dec. 23. Eastern Counties Ae.C. Dance at Gt. White Horse Hotel, Ipswich.
Dec. 26. Walhampton Bassett Hounds Meet at Cote Hill Aerodrome, Rugby.
Dec. 27. Ultra Light Aircraft Meeting, at Hanworth.
Dec. 30. Comrades of the R.A.F. Annual General Meeting.

1933.

Jan. 4. Women's Auto. and Sports Assoc. Dinner to Mrs. Mollison.
Jan. 6. Bristol and Wessex Ae.C. Dance at Grand Spa Hotel.
Jan. 6. No. 25 (F.) Sqdn., R.A.F., Re-union Dinner at May Fair Hotel.
Jan. 6. Reading Ae.C. Dance.
Jan. 11. B. G.A. Ball in Honour of Mrs. Mollison at Portman Rooms.
Jan. 12. "Airship Development Abroad." Lecture by Sqdn.-Ldr. R. S. Booth before R.Ae.S.
Jan. 26-28. Forest Gate Aviation Show.
Jan. 31. "Detonation." Lecture by F. R. B. King before R.Ae.S., Students' Section. Chairman, H. T. Tizard.
Feb. 1. Entries close for the Deutsche de la Meurthe Cup (Aero Club de France).
Feb. 3. Cinque Ports Flying Club Annual Dinner and Dance at Rl. Pavilion Hotel, Folkestone.
Feb. 8. "Recent Operations in Kurdistan." Lecture by Group-Capt. A. G. R. Garrod before R.U.S.I.
Feb. 10. Viceroy's Challenge Trophy Race, Delhi.
Feb. 13. "A Review of Air Transport." Lecture by G. E. Woods Humphery before Inst. of Transport.
June 24. Royal Air Force Display, Hendon.

TO OUR READERS

The Editor offers his Best Wishes for Christmas and the Coming Year, and many thanks for the numerous Greetings to ourselves received by sea, land, and air

EDITORIAL COMMENT

FEW people not directly connected with flying have any idea of the multitude of preparations which have to be made before a new airway can be put into operation. The American pilot Bert Hall, who fought in the Escadrille Lafayette of the French Air Service, records in his book, *One Man's War*, how an American Senator suggested to him that the United States should send 500 JN 4 army aeroplanes to France, flying them across the Atlantic under their own power. Since that time the public in general is a little better educated in matters aeronautical, but it still is slow to realise all the difficulties in the way of organising a regular service of aircraft across a continent, or across parts of two continents. When an aeroplane of Imperial Airways arrives late at its destination, scathing comments are not wanting; but when all goes well scant recognition is given to the minute attention to all sorts of detail which has made success possible.

Advancing

Imperial Airways are entitled to pat themselves on the back as they reflect on the record of the year which is now drawing to a close. The year 1932 has seen the opening for traffic of the southern stages of the Cairo-Capetown air route, the appearance of the "Atalanta" class four-engined monoplanes, a gratifying increase in loads carried over both the Continental and the Empire air routes, and the establishment of feeder air lines from both the Indian and the African trunk lines. This makes quite a satisfactory record.

The opening of the southern sections of the African

airway was made possible by putting four Handley Page 42 type machines on to the section Gallilee-Karachi and transferring the "Hercules" machines to the section Kisumu-Capetown. The "Hercules" machines have not proved very suitable for this new work. They were not designed for it, and they are now somewhat out of date. Still, they had to be used, for the only alternative would have been to postpone the opening of that section, and no one would have approved of such a delay. The Armstrong-Whitworth "Atalanta" was designed especially for African conditions, and is intended to operate the whole way from Cairo to Capetown, taking the place of the "Argosies" on the northern section, the "Calcuttas" down the Nile to the Lakes, and the "Hercules" machines from there on. The new monoplanes carry a pay-load of about two tons, though only nine passenger seats are provided, and they are expected to cruise at 120 m.p.h. This considerable increase in speed should materially reduce the present schedule time of 11½ days from Croydon to Capetown, which everyone has agreed is not so fast as air transport ought to be. Still, despite the shortcomings of the "Hercules" machines, the southern section of the African airway has recently put up excellent figures of reliability. In one period of three months the northern sections showed a reliability of 99·63 per cent., whereas the southern section showed 100 per cent. Safety is, of course, the first desideratum of an air service, reliability the second, and journey speed the third. The first two have been achieved, and the last is being improved.

The African airway must be judged mainly by its journey speed between Croydon and Capetown, but it should not be forgotten that the air service saves more over older methods of communication in dealing with Uganda, Kenya and Tanganyika, than when it saves a week in reaching Capetown. The saving of time in reaching some of these Colonies and Protectorates amounts to as much as 24 days, and the benefit of such a saving to the British people who live there needs no emphasis. As time goes on these Colonies will do more and more to swell the figures of mails and passengers carried.

Feeder lines have begun to radiate from the African trunk line. These are not efforts of Imperial Airways, but they could not have come into being if the Imperial aeroplanes were not plying regularly up and down the route. Private companies now run services between Nairobi in Kenya and Dar-es-Salaam on the coast, between Kisumu and Entebbe, and between Broken Hill in Northern Rhodesia and Elizabethville in Belgian Congo. This is quite a brisk beginning to a movement which is sure to grow.

On the Indian airway, the four "Hannibal" type machines are now in regular service, eastward of Gallilee. This service no longer uses Cairo as the junction, but Brindisi, whence the "Scipio" flying boats go straight to the Sea of Gallilee. During the past year the route down the Persian Gulf has been changed from the Persian side to the Arabian coast. Imperial Airways are no longer worried by the idiosyncracies of the Persian Government, and doubtless they feel intense sympathy with the Anglo-Persian Oil Company who still have to endure these idiosyncracies. On the Indian airway, too, one very important branch service has been opened, namely, that run by the Tata Company from Karachi to Bombay and Madras, a route of more than 1,000 miles. This service is more than a feeder line, and should very greatly increase the value of the air mail from Great Britain, at least so far as the Western and Southern provincial capitals are concerned. As yet there is no air link between Karachi and Calcutta, which would be the most important of all, both for its internal value, and also as one step further on the way to Australia. However, we hope soon to see Imperial Airways flying right on to Singapore, and there meeting the mailplanes from Australia.

Passengers and mails are still carried together in the same machines by Imperial Airways, a system which does not give the mails the full benefit of the speed of aircraft. We hope next year to be able to record experiments with the Boulton & Paul mailplane, which should open a new chapter in the history of air communications.

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Mrs. Mollison's Record

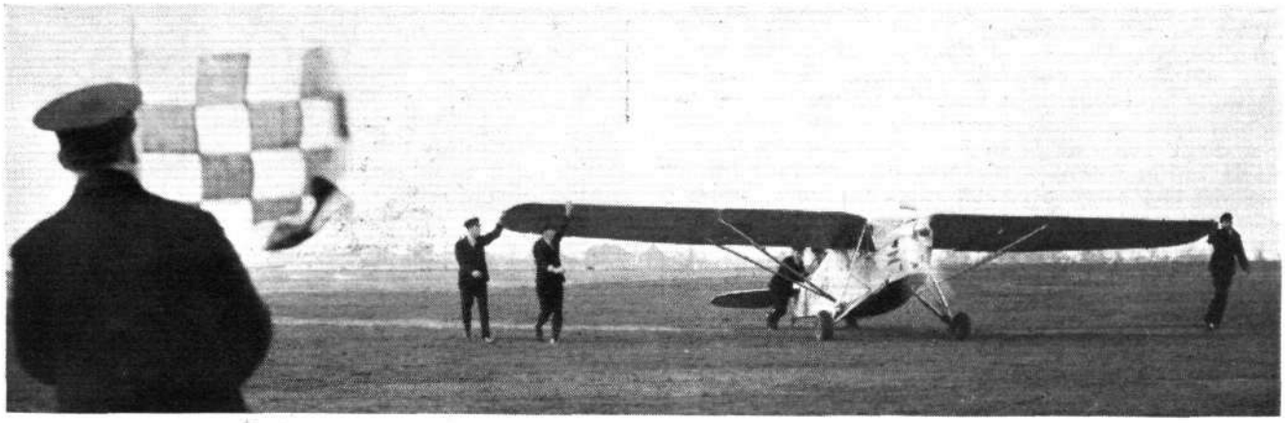
Once again it is our pleasant duty to offer very hearty congratulations to Mrs. Amy Mollison on a very fine flight. Bad luck in the matter of weather prevented her from getting back from Capetown as quickly as she had hoped to do, but this does not in any way detract from the merits of her performance. Very little real interest attaches to the so-called record. Beating the previous best time is purely a sporting matter, and though it has a certain interest considered merely as sport, it has very little bearing on the serious business of advancing the cause of aerial transport or teaching lessons which will help on that cause. The chief lesson taught by this double flight is that the "Gipsy Major" engine can now be reckoned on to stand up to all the conditions which are to be met in a long lone flight across all sorts of country and in all sorts of weather. Of the merits of the "Puss Moth" in those circumstances there had been ample proof before.

What strikes us most about Mrs. Mollison is that she is now a vastly improved pilot, compared with what she was when she made her first great flight from England to Australia. Then she had very little experience of cross-country flying on which to rely for that great adventure, though she certainly was a qualified ground engineer. Her health and strength almost broke down under the strain, and experienced pilots marvelled at her success and wondered what kindly goddess of the air took the almost raw girl pilot safely through the dangers and chances of the Malay Peninsula and the Dutch East Indies. Of her courage and determination there was never any doubt, but many a courageous pilot has come to grief through lack of experience.

On her two flights across Africa Mrs. Mollison has shown a mastery of circumstances which proves her to be now a seasoned pilot of the highest calibre. It takes a really fine navigator to find her way across a vast trackless area like the Sahara. She met terrific storms and difficulties, but she was always competent to deal with all eventualities. Her physical strength must now be far greater than it was on her earliest flight, for she indulged in the very minimum of sleep, and yet never suffered from collapse. The congratulations of the King express the thoughts of all his subjects.

Mrs. J. A. Mollison's Great Flight

To the Cape and Back in Record Times



HOME FROM THE CAPE : Mrs. J. A. Mollison landing at Croydon in her " Puss Moth " " Desert Cloud " on December 18. (FLIGHT *Photo.*)

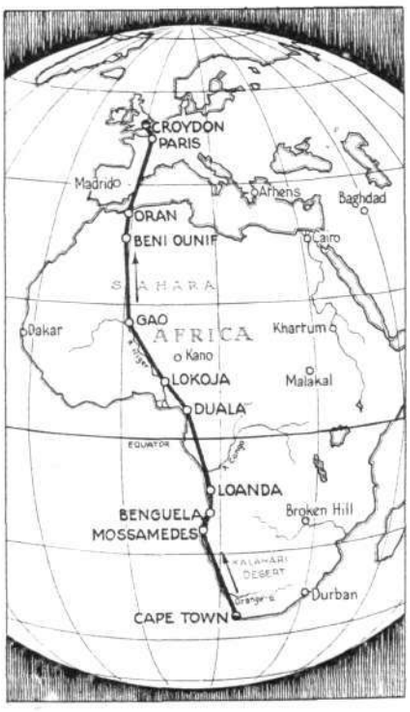
ALTHOUGH Mrs. J. A. Mollison was unable to beat her own record, for the England-Cape flight, on her return journey, she has succeeded in breaking the previous record (9½ days, established by Capt. C. D. Barnard and the Duchess of Bedford) by about two days. She has also shown, by the splendid effort on this last flight, in which she had to fight against most unfavourable weather conditions throughout, that she undoubtedly ranks foremost amongst long-distance pilots. " Amy's " time for the homeward flight was 7 days 7 hours 5 minutes.

We have already reported Mrs. Mollison's splendid start, but perhaps we may repeat this, briefly, once more. She left Capetown at 5 a.m. (G.M.T.) on December 11 and flew non-stop to Mossamedes, where she arrived at 3.45 p.m. (G.M.T.). After a stop of 5 hours she continued on towards Duala, but after passing Benguella was forced to return to the latter place owing to bad weather ahead. She had to wait about five hours here before she could get going again, and was eventually reported as having landed at 7.15 p.m. (G.M.T.), December 13, at Gao.

Mrs. Mollison reported terrible weather all along the coast, and she had to battle her way nearly all the time through dense mists and rainstorms. She spent the night at Gao, and in the early hours of December 14 was off again on her flight across the Sahara to Oran. All went well until approaching the Atlas Mountains ; here the weather conditions were terrible, and she wisely decided not to attempt the crossing at this stage.

Mrs. Mollison, therefore, landed at 4 p.m. at Beni Ounif, about 260 miles south of Oran, and about 1,370 miles from Croydon. She had hoped to complete the flight to Croydon the following day, but the weather was impossible for a crossing of the mountains and the Mediterranean.

It was not until the following day, December 16, that she was able to reach Oran, after a trying crossing of the Atlas Mountains in low clouds. Early next morning she set out for England, but was forced to return an hour later owing to bad weather. At 6.30 a.m. she made another start, and succeeded in reaching Le Bourget by 4 p.m. It was too late to proceed to Croydon that day,



On the left is a sketch map showing Mrs. Mollison's route from the Cape to Croydon. On the right " Amy " is seen on the platform, with Mr. F. G. L. Bertram, at Croydon after her arrival from Le Bourget. (FLIGHT *Photo.*)

and it was not until 10.20 a.m. next morning that she started on the final stage of her journey.

Mrs. Mollison concluded her magnificent flight when she arrived at Croydon on Sunday, December 18, after a rapid flight from Paris. She landed, at 12.5 p.m., amidst the cheers of the crowd, which not only thronged the aerodrome, but packed the Purley Way, and was received by Mr. F. G. L. Bertram, who was deputising for Col. Shelmerdine, the Director of Civil Aviation. Naturally, a night in Paris had rested her somewhat, but after the unbelievably strenuous flight back from Capetown we certainly did not expect to see her looking as fit as she did. Such a flight was enough to have caused many men to crack up. After Duala, on the way out, for example, she told us she had to go over 100 miles out from the coast in order to be able to fly more than just above the water during her trip through the night over that stretch, but Mrs. Mollison's stamina and sheer grit would seem to be proof against anything the weather, or flying, can "hand her."

Following the arrival ceremony there was a reception at Grosvenor House, where Mrs. Mollison was presented with a bouquet on behalf of the management. After this, both Mr. and Mrs. Mollison invited their friends to a cocktail party, and also submitted to a bombardment of questions from representatives of the daily Press. During the party, Col. Shelmerdine, who had hitherto been detained, arrived to congratulate Mrs. Mollison, and a message was delivered to her from His Majesty the King, who expressed his admiration of her courage and the way in which she had completed her flight.

Mrs. Mollison's success is shared by her trusty D.H. "Puss Moth," *Desert Cloud*, and its "Gipsy Major" engine, together with the following:—B.T.H. magnetos, K.L.G. plugs, Fairey metal airscrew, Smith's instruments, Reid Sigrist pitch-and-turn indicator, Dunlop wheels and tyres, Shell petrol, and Wakefield's "Castrol."

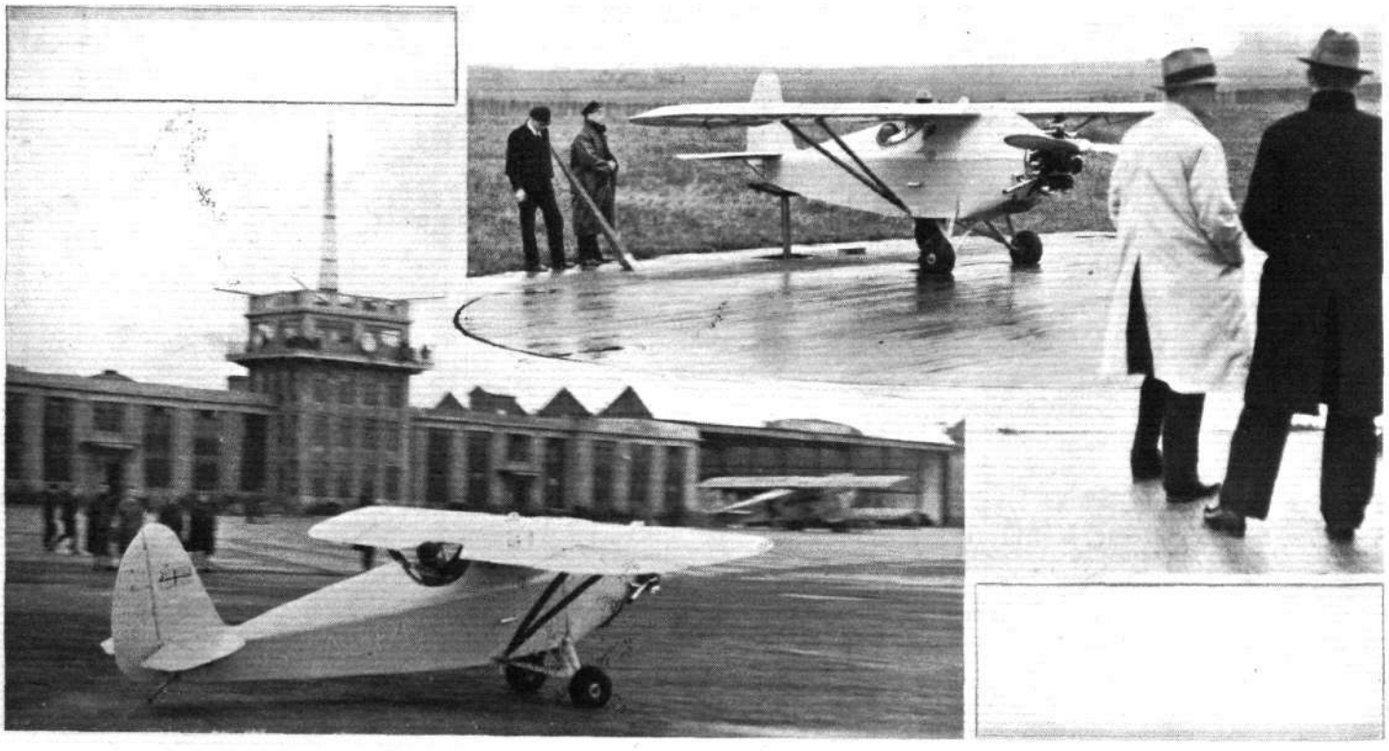
Official Reception of Mrs. Amy Mollison, C.B.E.

Following the enthusiastic reception accorded Mrs. Mollison upon her arrival at Croydon on Sunday and her subsequent triumphal journey to Grosvenor House, an official lunch was given her at the Park Lane Hotel on Monday last, December 19, when Mr. C. R. Fairey, M.B.E., as President of the R.Ae. Society, occupied the chair, the luncheon being on behalf of the R.Ae.S., the R.Ae. Club, and the S.B.A.C., celebrating the double record flight—London-Cape Town-London. A very representative gathering resulted, some 80 guests attending the function. Toasts were confined to *one*—Mrs. J. A. Mollison—following the usual loyal acknowledgment, Mr. C. R. Fairey voicing the feelings of great admiration and respect of all those present to do honour to this remarkable follower of aviation.

Mr. Fairey on asking honour to be accorded Mrs. Mollison, or rather Amy as he ventured to call her, said he had received a telephone message from the Secretary of State for Air to the effect that only indisposition prevented him from being present. Mr. Fairey also read a communication

(*Concluded on page* 1224)

A POPULAR WELCOME: Mr. and Mrs. J. A. Mollison acknowledging the cheers from the crowd outside Grosvenor House on Sunday, December 18.



AN UNSUCCESSFUL RIVAL: Mr. Victor Smith, the young South African airman sets out from Croydon on December 15 to beat Mrs. Mollison's Cape record. He had hard luck, however, and was forced down at St. Malo, while, when taking off for England on December 16, he crashed, damaging his Comper "Swift," but fortunately without hurt to himself. (FLIGHT *Photo.*)

THE "APPROVED INSPECTORS'" DINNER

Being a report of the proceedings at the Annual Dinner held in Sheffield whereby the officials of the Northern Office of the A.I.D. are enabled to meet their friends—the Approved Inspectors—and to discuss matters of mutual interest arising out of inspection of aircraft materials

AIRCRAFT supplies come, to a very much greater extent than most people imagine, from the Sheffield district; the number of firms, therefore, which have to be dealt with by the A.I.D. in that part of the world is really quite considerable. Somewhere about 1924 it was realised that the retention of an adequate staff of inspectors by the Aeronautical Inspection Directorate was a more costly matter than the Treasury would look upon kindly, and the system of Approved Inspectors was therefore instituted. To-day by far the greater number of firms in this district (the system of approved inspectors is not, of course, confined only to the Sheffield district) now have certain members of their own inspection staffs approved by the Air Ministry to release material for use on aircraft, and therefore to issue A.I.D. Release Notes and stamp the material with their own stamp issued by the A.I.D. This has led to an interchange of ideas and to a strengthening of the relationship between the A.I.D. and the firm's inspection staff, for it will be seen that under this system the firm's Approved Inspectors carry upon their shoulders, not only the interests of their own firms, but also the responsibility vested in them by virtue of their position as A.I.D. deputies. Last year Mr. C. L. Sherratt was the Inspector in Charge at the A.I.D. office for the Northern District, situated in Sheffield, and under his auspices there was inaugurated a function which has undoubtedly done a very great deal to engender smooth working between the firms and the A.I.D. This function was called the "A.I.D. Dinner," with the A.I.D. themselves as hosts and the Approved Inspectors as guests. Since that time Mr. Sherett has gone south to London, and his then deputy, Mr. N. Lindley, has taken his place. Whether or not it was Mr. Lindley's idea that the *rôle* of host and guest should be transposed for the dinner this year, we do not know, but it is certain that doing so was a stroke of genius, which has still further ensured the closer understanding between the respective parties, thus doing a very great deal to make the Approved Inspectors' Scheme work smoothly.

MR. DAVID FLATHER was in the chair on Wednesday, December 14, at the dinner held at the Royal Victoria Station Hotel, Sheffield, and in proposing the health of the A.I.D. he stressed the fact that this dinner did a very great deal to strengthen the friendships upon which the whole success of the Approved Inspectors' Scheme was based. In particular he welcomed Col. Outram, the Director of Aeronautical Inspection, and Maj. Myers, Chief Inspector of Stores and Armaments. Mr. Flather rather gave one the impression that he considered the tenure of office of the A.I.D. Inspectors in the district too short, suggesting that they had hardly got to know them before the inspectors were taken away. He referred also to the course instituted at the University of Sheffield in metallurgy and kindred subjects, which twelve inspectors had attended each year since its inauguration in 1928. He blew the Sheffield trumpet loudly, but quite justifiably, when he pointed out that not only was Sheffield Steel taken as a world-wide standard, but also that British aircraft owed their superiority very largely to this product. He asked that the apparent gradual introduction of more red tape in the A.I.D.'s requirements from the firms should, if possible, be cut down, as it very greatly increased the amount of work of the Approved Inspectors. Finally, he contested that there should be some form of Round Table Conference held at Sheffield quarterly, at which the A.I.D. and the Approved Inspectors could argue out their various differences to the mutual benefit of both.

LT. COL. H. W. S. OUTRAM, after thanking Mr. Flather for his proposal, said that they always welcomed constructive criticism, and knew that they could rely on the co-operation of the Approved Inspectors. With regard to the suggested quarterly conference, he thought that if some body could be constituted with whom the A.I.D. could deal directly and which represented the opinion of the majority of the Approved Inspectors, the conference might very well be helpful. Continuing, he referred to his recent visit to the U.S.A. and to the various points which had struck him during that time. One of the chief was the disparity between the number of steel specifications with which the inspection organisation has to deal with in that country and in ours. He mentioned that, over there, there were only some eight or ten specifications used in aircraft work, whereas in this country we had, including those of the B.E.S.A. and the D.T.D., some 80 odd! He asked whether it would not be possible for this point to be looked into and the number to be reduced, thereby greatly lessening the work of all of them.

MAJ. MYERS defended the movement of Inspectors from one place to another, although he admitted that they in London realised the difficulties only too well. He defended the action, however, by pointing out that it was only by moving people about that they were enabled to gain an all-round and wide experience. Those who were allowed to remain in one position for a considerable number of years, he said, might, it was true, become specialists in certain things, but they would know little of anything else. They had found the metallurgical course at the University very valuable indeed for the staff, and he thanked those responsible at the University for the help they had so freely given. He refuted Mr. Flather's suggestion that extra cost was entailed to the individual firms by the system of Approved Inspectors, for he said the Inspectors had to be there in any case, and in very few cases was their work greatly increased.

MR. LINDLEY expressed the grateful thanks of those stationed in the Northern Office to the committee of Approved Inspectors who were responsible for organising the dinner. The fact that both the officials of the A.I.D. and the firm's Approved Inspectors could meet together on an occasion like that in such an amicable way, spoke volumes, he thought, for the success of the whole scheme under which they worked. Out of approximately 120 firms with whom they had to deal in that district, over 80 were represented, he said, and the majority of those absent were unable to be present owing to the distance which they would have had to travel to the dinner. The system of Approved Inspection was not, he emphasised, an alternative method to that previously in force. It differed fundamentally and was based on the confidence and co-operation of the firms rather than on authority, and a certain amount of suspicion. It was, in fact, a breakaway from the old "schoolmaster and policeman" sort of attitude, which there was every reason to suppose was not so efficient as the existing system. It had brought an increased sense of responsibility, and of interest, to the Approved Inspectors, for no longer had they a convenient scapegoat in the A.I.D. Inspector to whom they could pass the responsibility when there was any hitch. Mr. Lindley waxed almost lyrical when he described the way in which the Approved Inspectors held the lives of pilots in their hands, and, in conclusion, after a humorous reference to the River Don, of which it is said "it holds a multitude of drop stampers' sins," he introduced Mr. H. S. Dickinson, who was responsible for the committee organising the dinner.

MR. DICKINSON referred to the old days when he used to imagine that to become an Inspector was to reach Heaven. He had, however, since assuming the responsibility of an Approved Inspector, had to change his views somewhat. He described his position as a peculiar one, wherein he was not allowed to pander to his own firm by exercising the fondness of a parent for its child, nor was he allowed the mercy of a Judge. In fact, he felt that the lack of latitude allowed to an Approved Inspector was perhaps one of the most serious difficulties with which they had to deal. Referring to Col. Outram's suggested eight or ten specifications of steel in the U.S.A., he thought most probably these might be classed, to use popular parlance, omnibus specifications, and that when they were analysed, it would be found that the number was probably not very far from all those in use in this country.

The "B 2" Trainer

Our contributor, Flt.-Lt. W. E. P. Johnson, describes in an amusing manner a recent demonstration trip he made to Lisbon with a Blackburn "B 2" Trainer ("Gipsy III"). He brings out admirably, the spirit which is so successful in selling British Aircraft abroad.

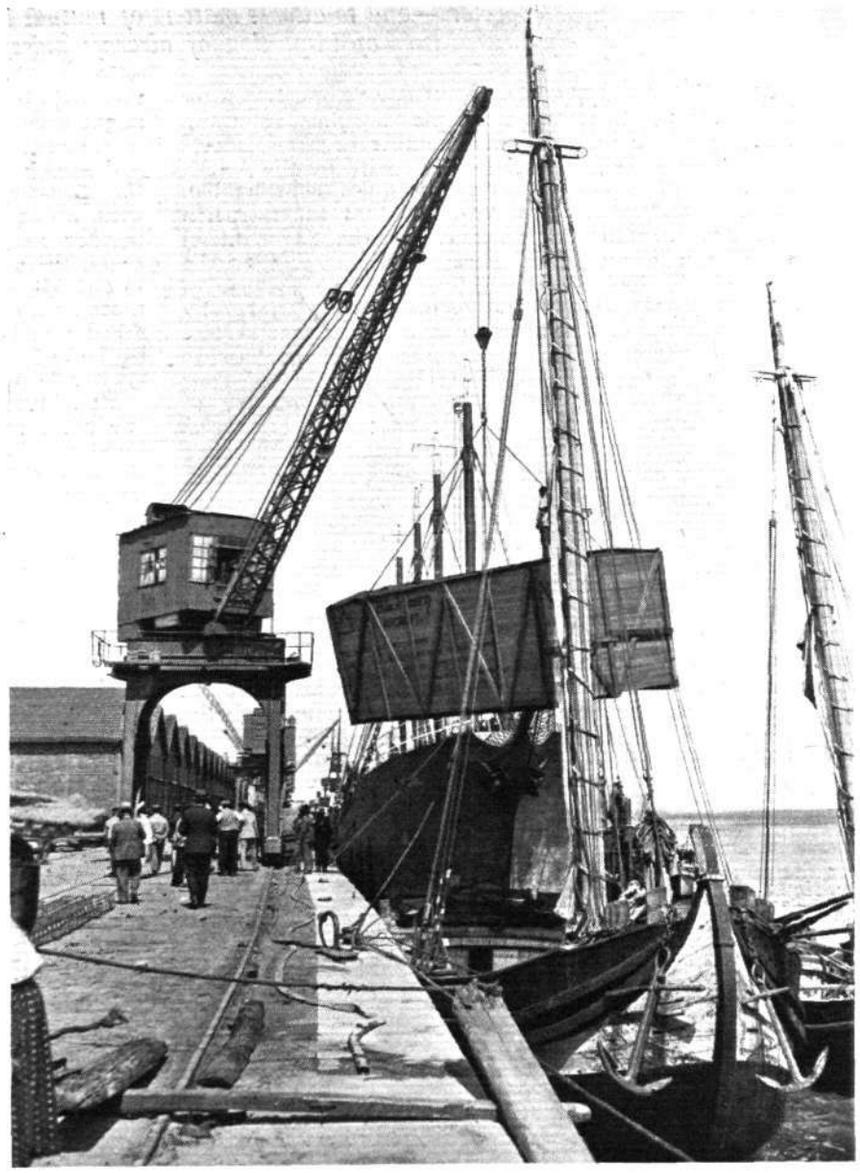
A Demonstration in Portugal

THE good ship *Fayal* was to take an aeroplane and its pilot to Portugal. The *Fayal*, built as a four-masted sailing ship, has degenerated from the picturesque but wayward habits of sail, to the more reliable but oleaginous habits inculcated by Diesel. She responds in every plate and rivet to the spontaneous repercussions of glutinous fuel. Happily for the pilot concerned, it appears that the effluvium of oil fuel is noxious to cockroach, rat or like "stowaway"—and only partially noxious to the human body. The *Fayal* proved almost inadequate for its deck cargo, which was in length almost exactly the maximum beam—wherefor catwalks had to be built around the ends of the aeroplane's box, and in the matter of height, the bridge decking had to be built up to enable a proper watch to be kept ahead. The Portuguese is a born sailor, in that, nothing daunted, he "makes do."

After moving the *Fayal* three times beneath the crane, the box was finally lashed down athwartships over No. 2 hatch, and the London Dock gates opened to usher us forth into the Thames. Four days later, in Oporto, the box was lowered overside into a barge to enable No. 2 hatch to be worked, and after being restowed there, was on the sixth day out finally discharged into a curious felluca-like Tagus barge in Lisbon.

At Lisbon meanwhile a problem had been solved. It was found quite impossible to take the box through the streets. Equally was it impracticable to de-box the aeroplane and tow it—even less wings. And there is no flying ground bordering the water anywhere. *Impasse!*

The Navy and the Army having been besought, permission was most courteously given for the use of the Naval Seaplane Base quay, crane and football ground 4 miles down the river. So the "frigate" was towed thither, whilst the pilot, stripped and sweating, feverishly cast off many lashings inside the box under the benign eye of a heavily-armed Customs man. On arrival at the seaplane base, many obliging naval ratings had the box on the quay in less time than it takes to read my writing, and in five minutes more the end was off the box and the "chick" was spreading its wings and receiving sustenance from the ever-efficient Shell organisation. In 40 minutes from landing on the quay, all formalities were complete and the "chicken" was flying strongly on its back over the Base. *Passe!*



The "B.2" being unloaded from the ex-rum runner "Fayal" and slung into the barge in which it made the journey down the Tagus to the seaplane base.

It speaks much for modern aircraft that after a 150-mile trip by road, a 900-mile sea passage across the Bay and no skilled attention, after only two pulls on the propeller it should fly—and fly perfectly. The take off, by the way, took less than half the soft, sandy football pitch, in a 10-m.p.h. breeze.

The aeroplane was in Portugal for demonstration to the Government as a trainer, and the tests were to be performed at Cintra, some 25 km. from Lisbon, where is the Military Flying School. After complying with legislation by "making a number" at Alverca, which is the international aerodrome for Portugal, we therefore proceeded to Cintra.

From the air it is possible to appreciate the marvellous and beautiful position and arrangement of Lisbon. The estuary of the Tagus opens into an almost landlocked lake, high ground shelters it, and ships of every sort and colour lend romance and interest. The land is of milk and honey when you are on it (wine is a cheaper drink than water), but when you are above it, it is of boulders and mountains. You may fly for an hour and not choose a forced-landing ground. Soon after arrival we had to fly up to Oporto and back. We went up inland by reason of coastal fog; next day we much preferred flying back along the coast—the most westerly of all Europe—because alighting in the sea seemed preferable to the average ground. Two days later the engine actually did fail, but happily over Cintra aerodrome.

When tests began there was considerable competition, the prize being understood to be an order for a dozen or so training aircraft. We found already under trial a Caproni (rather rudely known as *le type copie*; "Moths" not being unknown in Portugal!), a "Caudron" and a "Fleet" with a Kinner motor. In the possession of the Army were two "Tiger Moths" (one invertible) and with the Navy several "Moth" floatplanes.

A word for the "Fleet." Mr. Gordon Mounts is demonstrating this little two-seat "ship" in Europe, and doing it alarmingly well. He is a past master of demonstrative manœuvre; and a great lad to boot. We hope to see him in London (Eng.) some time. We flew his ship and he, our aeroplane, for mutual interest. It was a pity

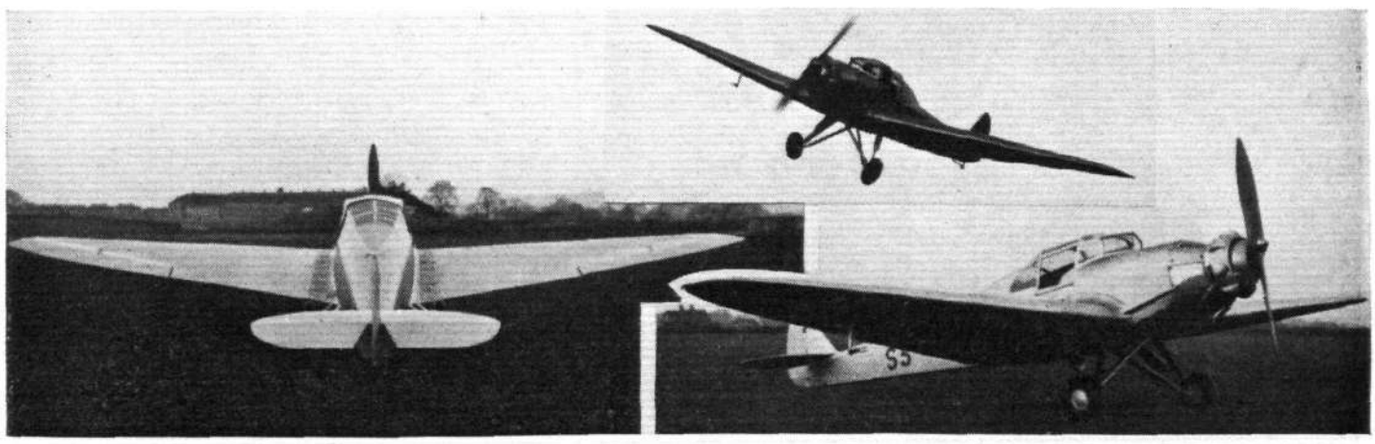
The Blackburn " B.2 " Trainer taking off from the football field en route for Cintra.

that his engine, after a great deal of really hard work, got tired just when it might have been most use to him.

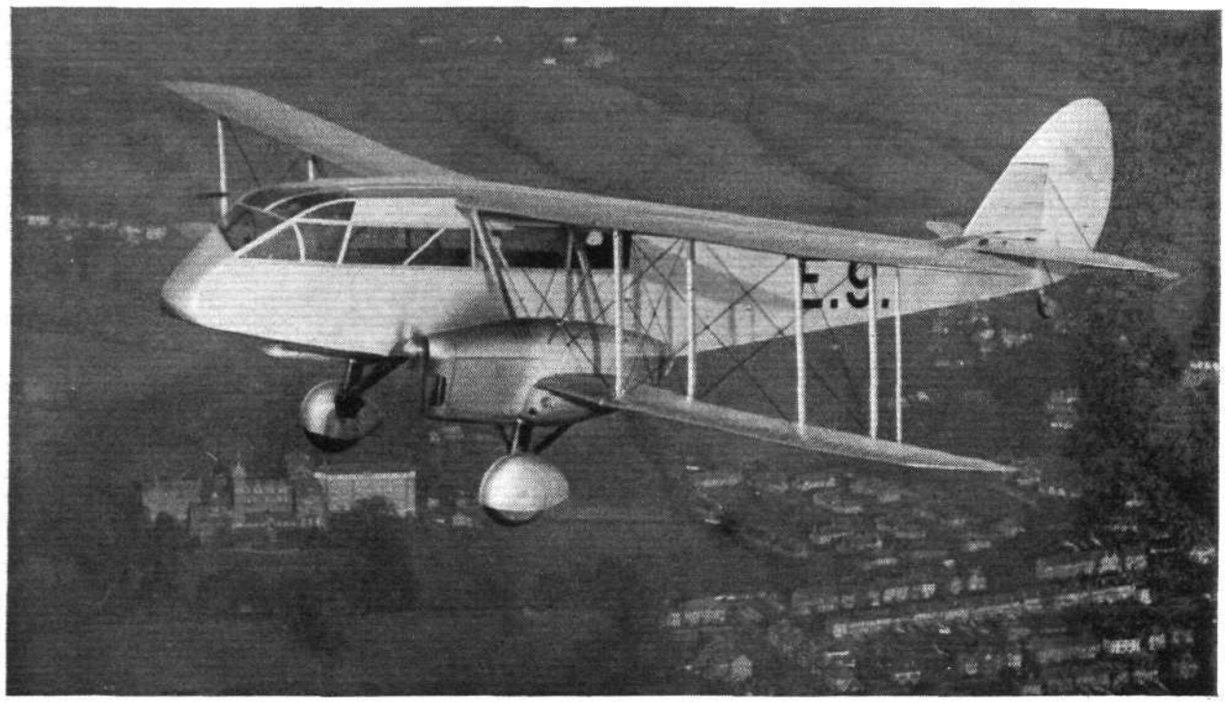
After several weeks in and about Cintra, our eyes were brightened (they had become a bit glazed by the effort of continual French conversation) by the vision of an Avro " Cadet " and a " Trainer," with Scott, Brown and Nelson, from England. They stayed all too briefly. Soon after these had gone, one for England and the other for Greece, who should arrive but Clarkson on a " Tiger Moth " (" Gipsy Major ") complete with inverted system and notable *éclat*. This seemed to make a party, for Clarkson and the writer were—so to speak—boys together. The consequence was some measure of co-operation, which obviously surprised and puzzled the Portuguese a little, it being evident that, strictly speaking, we should have shunned each other as deadly rivals. We organised a little team work to show off British aircraft, which seemed to have happy results for the same.

Some days later, after a lovely beat-up of Lisbon involving certain low manœuvres up and down the main street, and another amusing half hour or so at Cintra before a perfect galaxy of officers, we set a course back to the seaplane base in order to re-egg the chicken, the slight preliminary of landing back on the football pitch looming rather large with the pilot but happily being accomplished with 20 yd. to spare.

In retrospect, five weeks in Portugal were as a day. The British Colony, as typified by the members of the Royal British Club in Lisbon, is my lifelong creditor. Hospitality is so prevalent that the visitor is almost in danger of presuming upon it. British credit is of the highest. Portugal looks to us as an age-old ally and in these times that is no mean honour. The Portuguese want to buy British. They are a frugal nation, not populous, not ostentatious, but serious minded and extremely good-willing. They are personally quite charming. If any Englishman of an aeronautical disposition visits Com. Cabral at the seaplane base (Bom Successo) near Lisbon, he will feel at home. The officers, if he be absent, are kindness itself. At Cintra, Amadora and Alverca, the Army flying men will give the same sort of welcome. Maj. Cintra (by coincidence the second in command at Cintra) will entertain you in French, or his charming wife in English. But it is invidious to mention individuals where all vie with each other in friendship. On the civil side W. F. Stilwell, representing Blackburns, Thorney-croft, and, seemingly, a thousand others, or Charles Bleck (the D.H. agent) are among those on whom you must call in Lisbon. You will find the Aero Club of Portugal open its doors to you. Moreover, you will be able to live very cheaply, very amusingly, and very comfortably. The writer hopes to meet you there. W. E. J.



A NEW " SPARTAN " TWO-SEATER : This little machine has been built as a " full-scale " experiment, carried out as cheaply as possible, in order to provide the fullest possible information before going into production. The machine will be flown strenuously for a time so as to make sure that when, later on, production is started, there shall be no " snags." It is a side-by-side two-seater, fitted with Pobjoy " R " engine, and the fuselage of the experimental machine is of plywood construction, while the wings are the outer portions of the Stieger Monospar S.T.4. The first test flights, carried out by Col. Strange, Capt. Scott and Mr. Ash on Wednesday of last week, were entirely successful. The loaded weight with pilot, passenger, luggage, and three hours' fuel is 1,300 lb. The machine was designed by Mr. H. E. Broadsmith.



The De Havilland "Dragon"

2 "Gipsy-Major" Engines

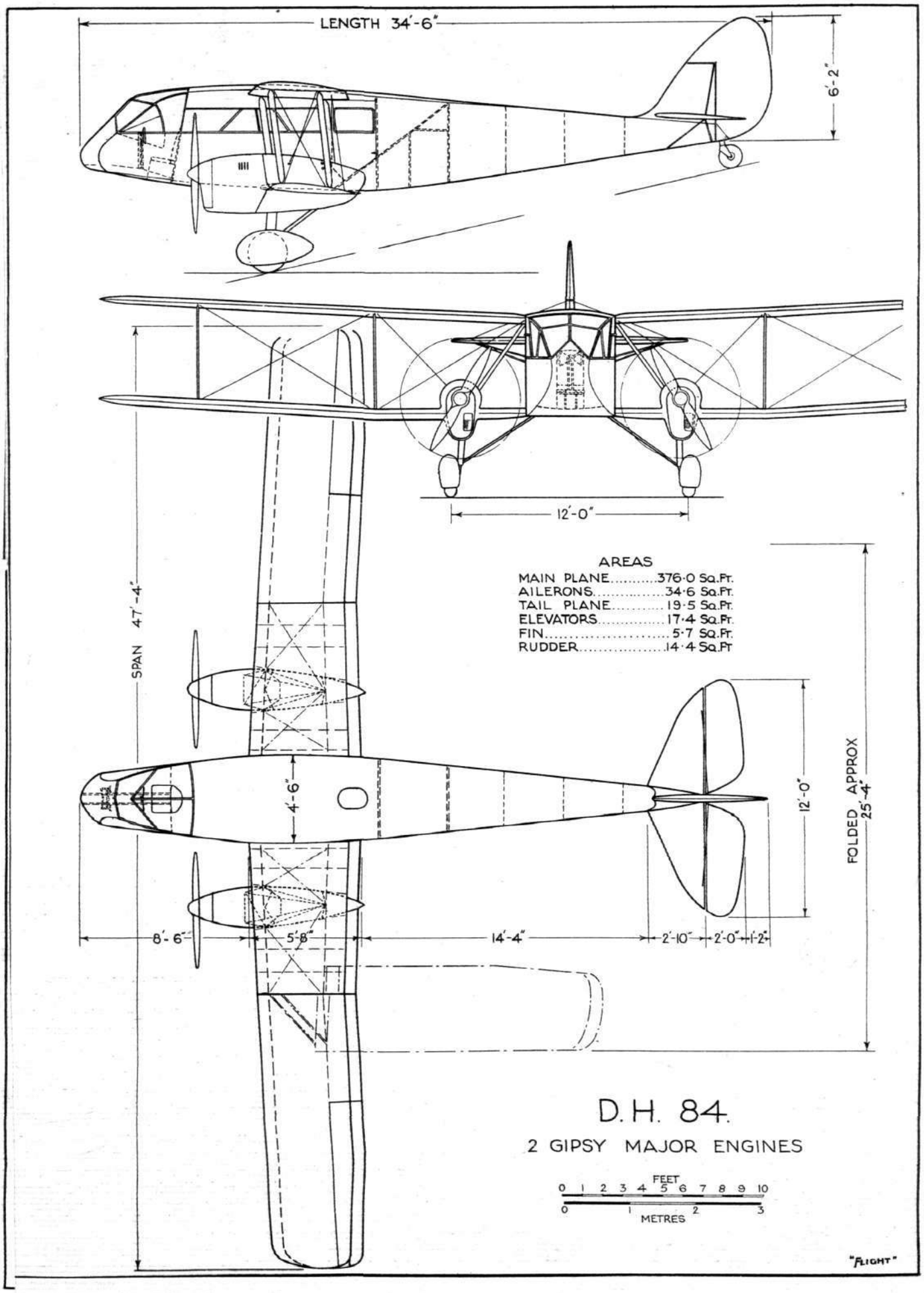
SUPERFICIALLY there is little to tell one that the new de Havilland D.H.84, or "Dragon" as the class has been named, is a very remarkable aircraft.

In external appearance it is just a plain, well-proportioned twin-engined aeroplane with wings of unusually high aspect ratio (if one may still employ this old-fashioned term) and a simple well streamlined undercarriage.

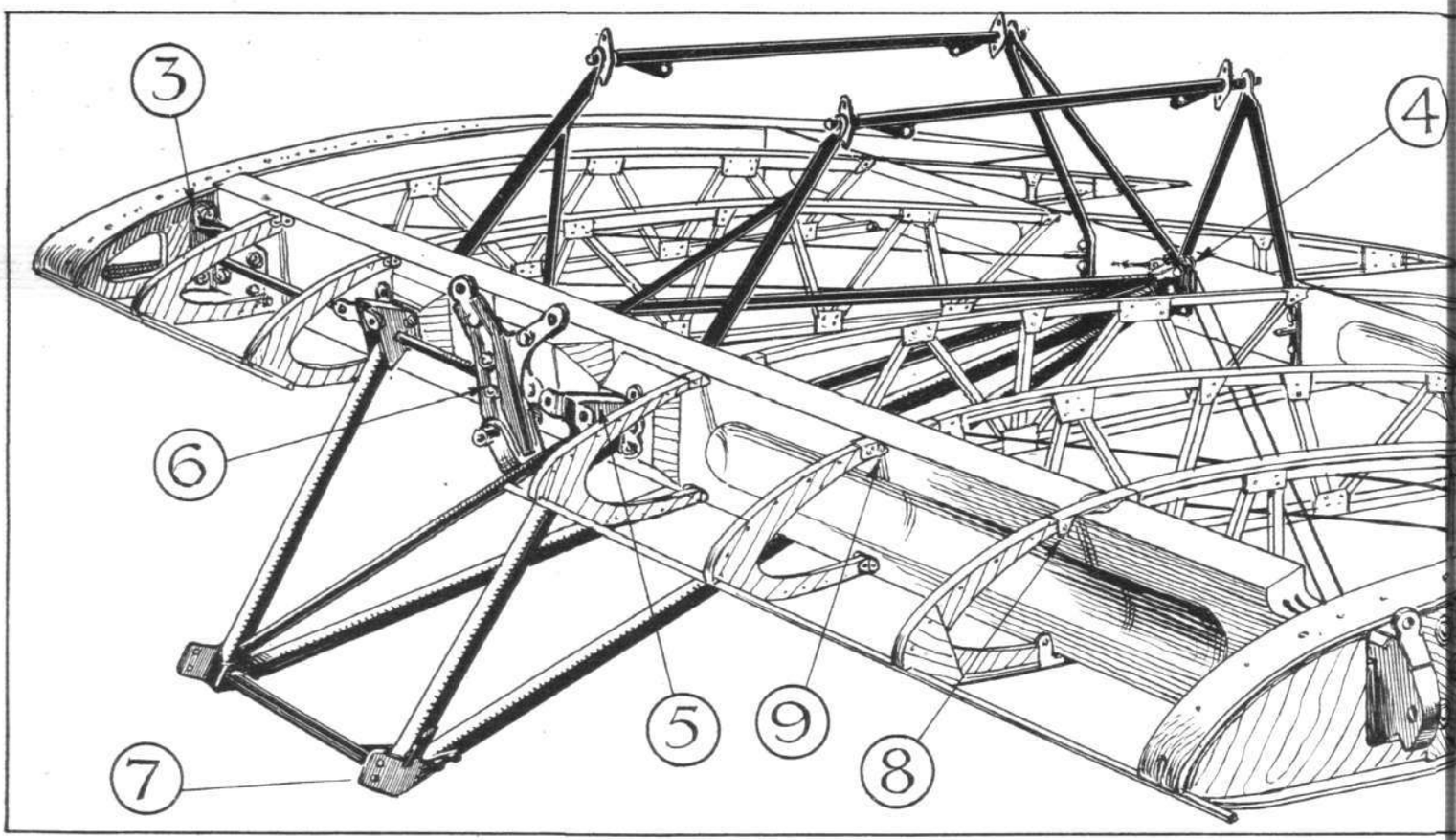
For several years it has been our custom to use two "figures of merit" in describing aircraft: The ratio of gross weight to tare weight, and the Everling "High-speed Figure" $\frac{\eta}{2k_D}$, which is the minimum drag coefficient divided into the propeller efficiency. The reason for using $2k_D$ instead of k_D is that the value thus obtained is then directly comparable with that of machines the characteristics of which are expressed in metric units. The ratio of gross weight to tare weight is an index of the structural efficiency of the aircraft, and the Everling "High-speed Figure" is a measure of the aerodynamic efficiency in that for the same propeller efficiencies machines with the same "High-speed Figure" will have the same minimum drag coefficients.

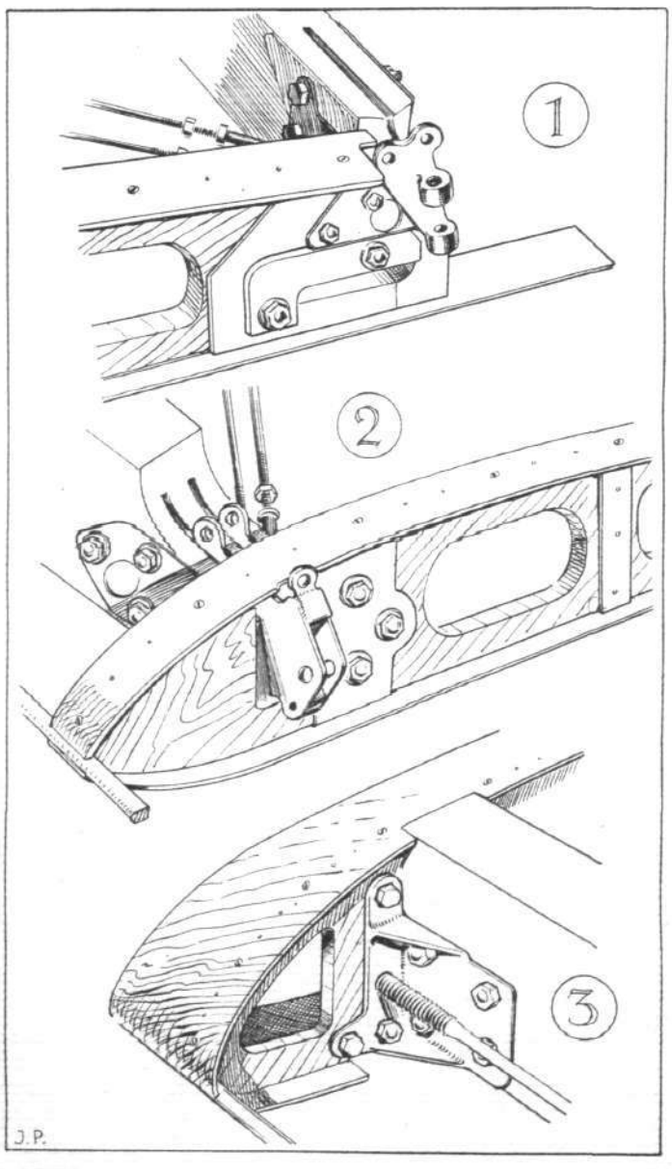
In the case of the de Havilland "Dragon," both these "figures of merit" have an unusually high value. For example, the tare weight of the machine, equipped to carry six passengers, is 2,300 lb. (1 045 kg.) and the permissible gross weight is 4,200 lb. (1 910 kg.), so that the ratio of gross to tare weight is no less than 1.825. The machine, in other words, carries as normal disposable load and *not* as in any way an overload, 82.5 per cent. of its own weight! This is a quite remarkable achievement, and has only been equalled, to the best of our knowledge, by the de Havilland "Fox Moth," in which the value exceeds 90 per cent. The structural efficiency should, to be really convincing, be related to the speed of the aircraft since a very slow machine can more easily be given a large ratio of gross to tare weight than a fast machine. This is where, to some extent, the "High-speed Figure" comes in useful, in that its calculation is based upon

THE DE HAVILLAND "DRAGON": This photograph, and the view at the top of the page, gives a good idea of the appearance of the new machine. The identification number E.9 is a trade registration, and indicates that the machine is still experimental. Since these photographs were taken the "Dragon" has been undergoing official tests at Martlesham. (FLIGHT *Photos.*)



THE DE HAVILLAND "DRAGON": General arrangement drawings.





maximum speed. The top speed of the de Havilland "Dragon" is about 130 m.p.h. (official figures are not available, but flying the "Dragon" against a "Puss Moth," the former was the faster), and the "High-speed Figure" works out at 21.6, which must be regarded as very good for a twin-engined machine, and points to a low minimum drag coefficient. At 85 per cent. of top speed the cruising speed is 111 m.p.h., so that the machine is not by any means a slow one.

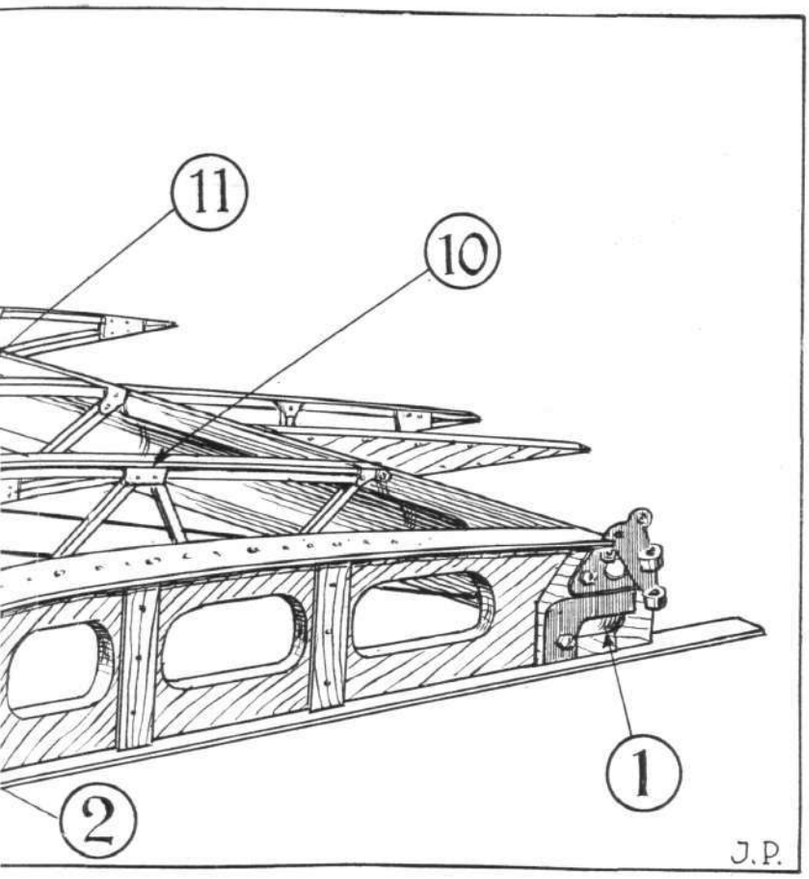
Thus both in structural and in aerodynamic efficiency the "Dragon" can be said to be well above the average.

These two "figures of merit" are chiefly of interest to the technician, and may not convey very much to the potential operator, although the fact that the machine carries as disposable load such a large percentage of its own tare weight does tell him that his pay load is likely to be a very useful one. What the operator really wants to know is how much the machine will cost him, either per passenger seat or per lb. of pay load, and what the running and operating costs are likely to be. These figures are not quite as readily assessed as are the two technical "figures of merit" referred to above. But a very fair idea can be formed without going into a lot of perplexing figures.

Some years ago, at the lecture by Herr Martin Wronsky to the Royal Aeronautical Society, we believe, Mr. C. C. Walker, chief engineer of the de Havilland Aircraft Company, expressed the view that a transport aeroplane may be considered efficient if its first cost is less than £500 per passenger seat installed, and if, also, it carries a passenger 100 miles in one hour at the expenditure of about 2 gallons of petrol. Let us see how the new de Havilland "Dragon" fares when measured with Mr. Walker's yard stick.

Normally the "Dragon" will have seating accommodation for six passengers. This number can be increased if a shorter range is sufficient. With six passengers (each assumed at 160 lb. weight, and allowing 45 lb. of luggage for each passenger), the cruising range is in the neighbourhood of 460 miles. The "Dragon" will be marketed at £2,795, so that the first cost per passenger seat amounts, on this basis, to £465.8. So far the machine is well below that laid down by Mr. Walker some years ago. When the machine is used on short routes, so that the number of passenger seats can be increased to eight, the cost per seat reduces to £349.4, an even more economical figure.

Another way of looking at it is to examine the first cost per lb. of pay load. This, obviously, must be related to

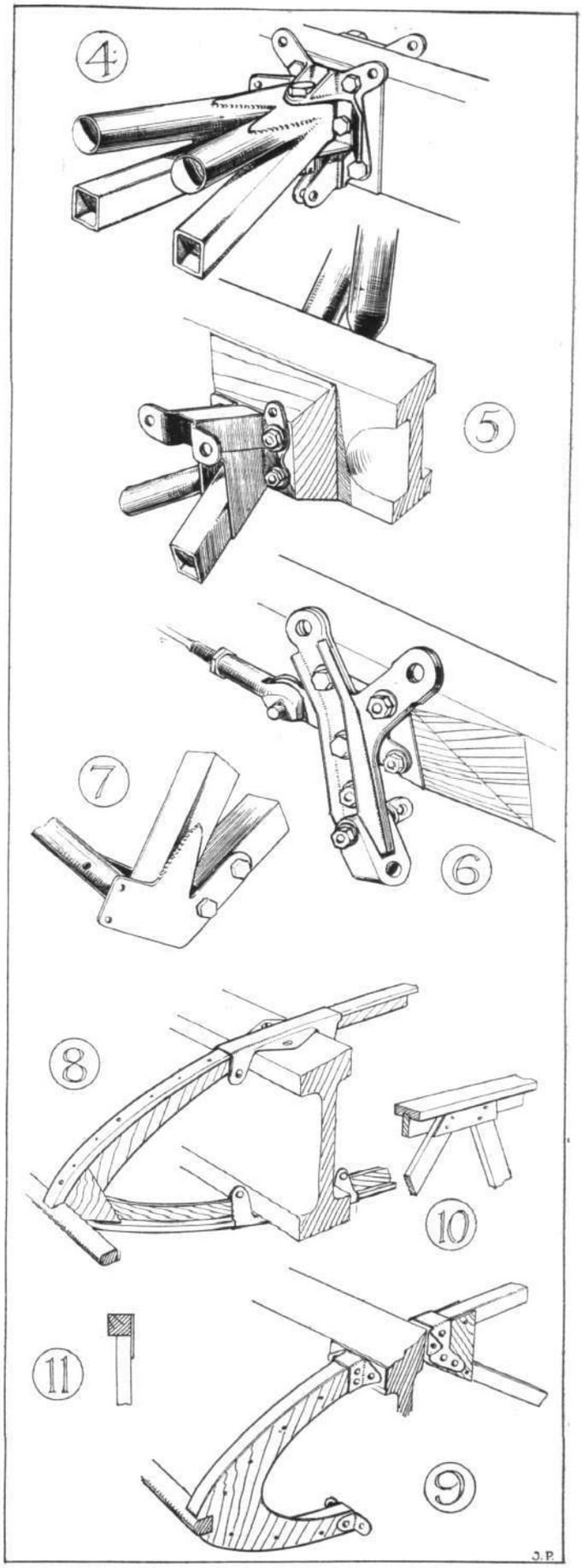


the range, and it is only possible to compare machines having the same range. When the "Dragon" carries 60 gall. of petrol, sufficient for approximately 460 miles, the pay load is 1,240 lb., so that first cost per available pound of pay load is £2.25 for that range. If the range is reduced, the pay load is, of course, correspondingly decreased. It is estimated that the fuel consumption of the two "Gipsy Major" engines will be approximately 13 gall. (or about 100 lb.) per hour. From this it is easy to work out the variation of pay load with range, or rather with duration. For example, if a duration of two hours is sufficient, the pay load will be increased by 260 lb. to 1,500 lb., and in that case the first cost per lb. of pay load is reduced to £1.86.

Now for Mr. Walker's other criterion of efficiency: That an aeroplane, to be regarded as economical, must carry each passenger 100 miles in one hour for the expenditure of about 2 gall. of petrol. The "Dragon" cruises at 111 m.p.h. approximately. Its two engines consume about 13 gall. of petrol in an hour. This consumption corresponds to very slightly more than the 2 gall. per passenger per hour, but, on the other hand, the passenger is carried 111 instead of 100 miles for the quantity of fuel.

It may be argued that petrol is only a small percentage of the operating cost. That is, of course, perfectly true, but at the same time the power expenditure per passenger, or in other words the amount of fuel consumed in transporting a passenger a given distance, is a very useful index to what the Germans call "Rentabilität." Within reason, maintenance, running costs (fuel and oil), etc., are proportional to engine power, and this, therefore, forms a fairly good guide to the economy of an aeroplane. The "Dragon" has a total of 260 b.h.p., so that, with 460 miles' range, six passengers and plenty of luggage, the power expenditure is 43.3 h.p. per paying passenger. This is in itself a very economical figure, and if a shorter range is sufficient and eight passengers are carried, the figure becomes 32.5 h.p. per paying passenger. Few would deny that this represents economical flying.

Still adhering to the original range of 460 miles, the useful load of the machine can be expressed as a pay load of 4.77 lb. per h.p., or, at the cruising consumption at 111 m.p.h. of 13 gall. per hour, as 4.73 ton-miles per gallon. This relates to the machine as equipped to carry six passengers with their luggage. If the cabin furnishings were removed and the machine used as a freighter, the figure would become somewhat better, while any decrease in the range would, of course, still further improve



SOME STRUCTURAL DETAILS OF THE D.H.84 ("DRAGON"): As the machine is of very simple and straightforward construction generally, the greatest interest centres around the steel tube structures carrying the engines and petrol tanks. The large sketch shows the part of these which can be regarded as being part of the wing structure, the details being more clearly shown in the small sketches. (FLIGHT *Sketches.*)

the ton-mileage per gallon by giving an increase in pay load.

We have gone into these figures for the de Havilland "Dragon" fairly fully, because the machine appears to be the nearest approach to an aircraft capable of remunerative operation which has ever come to our notice. In fact, we would be inclined to go further than that and definitely to express the view that the machine *does* make unsubsidised flying commercially possible.

In its general design the D.H. "Dragon" is not, as already pointed out, in the least unorthodox. It is a twin-engined biplane characterised by wings of somewhat larger span than one is accustomed to, but of narrow chord. The machine went through the design stage very quickly indeed, and the construction of the first machine (shown in our photographs) was also pressed on rapidly, so that although the design was only started in September last, the first test flight was made on November 24 by Capt. H. Broad.

THE DE HAVILLAND "DRAGON": This view of the nose and engines illustrates the good view obtained by the pilot, and the careful fairing of the "Gipsy Major" engines. The undercarriage is of low drag. (FLIGHT *Photo.*)

Structurally the "Dragon" is a typical de Havilland machine, if by that one means the type of construction used by that company almost entirely some few years ago, before the metal "fashion" had got as many adherents as it has nowadays. To those who believe that all aircraft should be built of metal, whatever their size and type, the "Dragon" will seem a retrograde step. It is, however, a step which has made the "Dragon" possible. Had it been built in metal it would certainly have been a good deal heavier, and very much more expensive. That the need for all-metal construction of civil types is as real as in military aircraft has not been proved. The de Havilland Company has had wooden "Gipsy Moths" flying in almost every corner of the world, and such troubles as have been encountered have been relatively small. Shrinkage of wood, absorption of moisture, warping, and so forth, have been far less than many would suppose, and recent work on the subject has indicated that these minor troubles may be overcome. The use of dished washers for maintaining friction or "grip" when wood shrinks, the protection of corners where moisture may accumulate with doped fabric or bitumastic paint, and so forth, have been found effective antidotes. And apart from the lightness and cheapness of wooden construction, there are many advantages, such as greater ease of repair in out-of-the-way places.

The "Dragon," then, is a very ordinary aircraft structure, with a fuselage covered with three-ply wood, and wings having spindled I-section spars and wooden ribs. The only metal in the structure, a few fittings apart, is the steel tubing of the engine supports in the wings.

The petrol tanks are carried in the fairings behind the engines, and supply to the carburettors is by pump, the head available being barely sufficient to ensure gravity feed under all conditions.

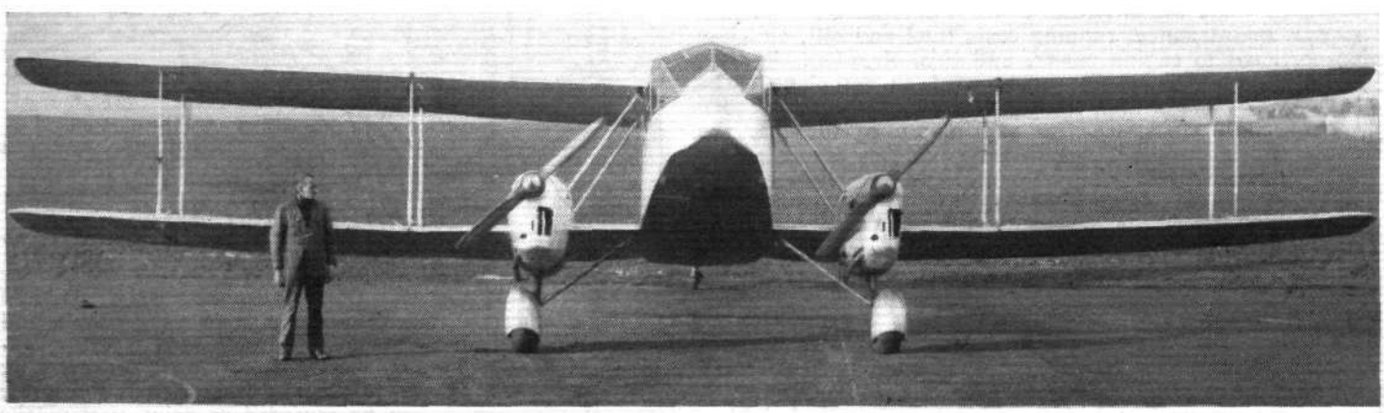
Our sketches show these steel structures in the wings, but it should be pointed out that the engine bearers themselves are not shown. They pick up on the foremost points of the structure shown, a bulkhead being interposed.

The cabin is of fairly large dimensions, 9.75 ft. × 4.5 ft. × 4 ft. The six seats are placed along the sides, and are very comfortable. If no lavatory is fitted there is a luggage compartment of 50 cu. ft. capacity, but a lavatory reduces this to 20 cu. ft.

A slightly unusual scheme has been followed in the design of the undercarriage. This is of the "split" type, and the wheel-carrying strut is telescopic, each tripod being a rigid structure, with the strut telescoping into the fixed strut, and carrying the wheel cantilever fashion. The chassis struts go to the engine-carrying steel tube frame in the wing, and the landing load is taken by a diagonal strut to the top corners of the fuselage.

The pilot's cockpit in the nose of the fuselage is cut off from the cabin by a partition. The view obtained is very good, and the pilot can see both his engines.

Final official performance figures are not yet available, but during the take-off tests a height of 145 ft. was reached in a distance of 456 yards, instead of the 66 ft. stipulated in the regulations. A height of 3,240 ft. was reached in 5 min., so that there is nothing to complain about in the take-off of the machine.



W/SPAN²: Reduction of induced drag has been aimed at by using wings of large span, giving low span loading. (FLIGHT *Photo.*)

The Warsaw Convention

In "Flight" for December 1 and December 15 Mr. Alan Goodfellow contributed articles expressing his own expert views on the question of third party liability as affected by the International Conventions. This week he follows these articles with a very able summary of what the Warsaw Convention is, so that our readers may be perfectly clear about the many important points it contains.

EARLY next year a Convention of far-reaching importance to everyone engaged in or in any way concerned with international air transport will come into effect. On October 12, 1929, fourteen States gave their approval to an International Convention for the purpose of regulating the liability of international air carriers in respect of passengers, baggage and goods carried by them. Since that time practically all the European States, and others as far away as China and Brazil, not to mention the British Colonies, have given their approval to the Convention, in principle.

The main provisions of the Convention may be summarised as follows:—

(1) The Convention applies to all international transport of persons, baggage or merchandise, effected for hire or reward or by an air transport enterprise. For this purpose transport is considered international when the ultimate destination or any intermediate landing is in a different State from that of departure.

(2) By articles 17, 18 and 19, the carrier is made liable for death, bodily injury, or delay sustained by passengers, for loss of or damage to goods or baggage, and for loss resulting from delay of goods or baggage, unless he proves:

(*a*) In the case of passengers that he and his officials have taken all possible measures that were necessary to avoid the damage (Art. 20).
(*b*) In the case of baggage and goods that he and his officials had taken all possible measures as above, but with this difference, that in respect of baggage and goods the carrier may escape liability if the accident was due to a "Fault of pilotage or navigation," whereas in the case of passengers he will be liable for any such fault (Art. 20).
In either case, contributory negligence may be pleaded as defence to liability.

(3) Provided that he complies with the stipulations of the Convention as to passenger tickets, baggage checks and consignment notes and is not guilty of fraud, the liability of the carrier is limited as follows:—

(*a*) In the case of passengers, to 125,000 francs per passenger.
(*b*) In case of goods, to 250 francs per kilo.
(*c*) In the case of hand baggage, to 5,000 francs per passenger.

These rates are based on a franc value which corresponded roughly in 1929 to £1,000 per passenger, £2 per kilo of goods and £40 for hand baggage. It is not quite clear how far the figures are effected by exchange fluctuations, but presumably the figures are now increased in amount owing to the depreciation of the £.

(4) Neither party may contract out of the terms of the Convention, but the carrier's liability may be increased by contract between himself and the passenger or consignor.

(5) In order to take advantage of the limitation of liability the carrier must deliver a ticket, baggage check, or consignment note respectively, containing the following minimum particulars:—

(*a*) Passenger tickets.
Place and date of issue—points of departure and destination—anticipated stopping places—name and address of carrier—an indication that the transport is subject to the Convention.

(*b*) Baggage Checks.
The same particulars and in addition, number of passenger ticket—number and weight of packages—the amount of declared value, if specially declared for insurance purposes.

(*c*) Consignment Notes.
Place and date of completion of document—points of departure and destination—anticipated stopping places—name and address of the Consignor—name and address of the first carrier (where more than one)—name and address of the Consignee—nature of goods—number, method of packing, and distinguishing marks of packages—weight, quantity, volume, or dimensions of the goods—the special value declared (if any) for insurance purposes—an indication that the carriage is subject to the provisions of the Convention. (Arts. 3, 4, and 8.)

(6) Claims must be brought in the territory of one of the contracting States, but the plaintiff has a very wide choice of Courts. He may sue before the Court of the domicile of the carrier, or of the carrier's principal place of business, or of any branch or office in which the contract was made or before the Court of the place of destination.

While international air carriers generally will probably welcome the Convention as fixing some definite limit to their liability, passengers and consignors will also have cause for satisfaction in as much as their task in recovering damage is very much simplified.

The plaintiff gains two great advantages from the Convention, firstly, by having such a wide choice of Courts in which to bring his action, and secondly, by being able to call upon the carrier to prove that the accident was not his fault instead of having to prove affirmatively that the carrier was to blame. In practice, the Convention should work with a reasonable degree of fairness as between the carrier and the carried, though the dice seem to be loaded somewhat in favour of the latter.

It is interesting to note that in this Convention the principle adopted is one of a presumption of negligence as against the operator, a principle which the writer suggested in his previous article for application to the International Third Party Convention now under consideration. Without admitting that the aircraft operator deserves to have even this burden thrust upon him, the principle is certainly fairer than that of absolute liability which the latter convention seeks to impose, and affords ample protection to passengers, consignors, and third parties alike, while air transport is in the development stage.

The Warsaw Convention comes into operation as from midnight on February 12-13, 1933, so far as those countries which have ratified it are concerned, namely, Brazil, France, Jugo Slavia, Latvia, Poland, Roumania, and Spain. As far as at present known, it will apply to Great Britain and Northern Ireland about one month later, owing to the delay in ratification. Italy and Belgium are about to ratify, and presumably all the other adherents will follow suit in the near future.

French Long Distance Flight

RENE LEFEVRE, the French airman, left Orly on December 18 on an 8,000 miles flight to Saigon in French Indo-China. He is flying a Mauboussin II light plane (40 h.p. "Salmson").

Another Height Record

RENATO DONATI, the well-known Italian air pilot, is said to have attained an altitude of 9,700 metres (over 5½ miles), thus breaking the existing height record for tourist machines at present held by Germany. Donati was flying an Italian C.N.A. machine powered by a C.7 engine of 100 h.p.

Air League of the British Empire

As a result of the manifesto on British Air Policy issued on November 8 on behalf of the Royal Aeronautical Society, the Royal Aero Club and the Air League of the British Empire, the Air League have invited each of the other two bodies to nominate two members to serve on a reconstituted Executive Committee of the Air League. The invitation has been accepted, and the Royal Aeronautical Society have nominated Mr. Griffith Brewer and Mr. Lawrence Wingfield, the Royal Aero Club Lord Gorell and Mr. W. Lindsay Everard, M.P. The new committee met on December 15, under the chairmanship of Maj. Gen. J. E. B. Seely, who was unanimously elected to fill this office, Capt. F. E. Guest, M.P., the former chairman, remaining on the committee as deputy-chairman.

Heaviest African Air Mail

THE Imperial Airways machine *Hengist*, which left Croydon on December 14 for Africa, carried the heaviest load of mails yet carried by an aeroplane to Africa; it weighed over half a ton, and contained Christmas greetings and presents for all parts of Africa.

Aeroplane Assistance for French Flooded Area

AERIAL assistance has been rendered to flooded areas in South-Western France where houses and bridges have been washed down and railways washed away. At one village a farm completely cut off by water was provisioned from the air, sacks of bread being dropped in the streets.

The Royal Aero Club and Xmas

THE Royal Aero Club will be closed on Christmas Day, December 25, except to members staying in the Club, and breakfasts only will be served on that day. The Club will also be closed from 3 p.m. on Friday, December 30, for the Annual Staff Christmas Party.

R.Ae.C. HONOURS BRANCKER

THE Royal Aero Club of Great Britain was the scene, on December 14, of an informal ceremony at which was unveiled a portrait of the late Sir Sefton Brancker, who was Director of Civil Aviation until his death in the airship R.101, when she crashed in France in October, 1930. The unveiling ceremony was performed by Lord Gorell, Chairman of the Royal Aero Club, who was Under-Secretary of State for Air when Capt. Guest was Air Minister.

Lord Gorell said that he regarded the occasion as particularly a club matter, as the painting which he was to unveil had been subscribed for by members of the Royal Aero Club, and painted by one who had been in the R.A.F. This was as it should be. Brancker was a "clubable" man. He was not, perhaps, typical of them, he was often difficult to understand, but he managed to make himself liked, and indeed loved, not only at home, but also by the foreigners with whom he came in contact.

Lord Gorell said that there were innumerable Brancker stories, and he thought that Brancker could be described in three, which he proposed to tell.

In 1928 when on one of his many flights, Brancker had his attention called by his pilot to a range of hills looming up ahead. Brancker's comment was that probably they could get over them, or around them, but if not, dammit they would have to go *through* the hills. That was typical of Brancker. When there were difficulties in his way he would willingly try to get over them or around them, but if necessary he was always prepared to go through them.

The second story related to an occasion when a dear old lady said to Brancker that she supposed that he had many thrills in the air. To this he replied, with one of his famous smiles: "No, Madam, I keep them for terra firma."

And finally there was the story of Brancker on a flight during the war, when he happened to land at an air station where flying instruction was being given. Brancker had made one of his not very good landings, and the instructor thought Brancker, who was, of course in flying kit over his uniform, was a pupil. He criticised the landing severely and told his "pupil" to have another try and do better. Brancker did, and the second was not quite so bad. Only when Brancker took his flying kit off did the instructor realise who he was.

In giving a brief outline of the career of Sir Sefton Brancker Lord Gorell pointed out that with his life and his landings he must be considered lucky never to have had a bad crash. He said that when he (Lord Gorell) had the doubtful privilege of being Under Secretary of State for Air, Brancker was an arrow, or rather a whole sheaf of arrows, shooting criticisms in all directions. When Sir Frederick Sykes "went underground" (*i.e.* joined the Underground company) the grandiloquent title "Controller" of Civil Aviation was abandoned, and "Director" took its place. He pressed Captain Guest to appoint Brancker, and he thought there never was a happier appointment. This was in 1922.

People often wondered how Brancker got through his office work. The truth was he played hard, but he was also able to work hard, and he had never allowed his zest for life to interfere with his work.

He thought that if the end had to come, Brancker would have wished it to come something in the way it did, something spectacular and something connected with aviation. He then unveiled the portrait, which has been painted by Capt. E. Newling, and a reproduction of which was published in FLIGHT last week.

THE A.E.T.C. AND C.A.E.

LAST December Mr. C. H. Roberts, as Principal, presided at the first annual dinner held since the Automobile Engineering Training College had been what one might justifiably call modernised, by the addition of the College of Aeronautical Engineering under the same roof at Chelsea. This year, on December 16, Mr. Roberts again presided at the dinner, but over a much larger gathering, and one, moreover, which showed by its constitution that the aeronautical side of the college activities is of no mean importance.

By way of a prelude, KATHLEEN COUNTESS OF DROGHEDA proposed the toast of "Amy Mollison," who at that time was resting in Paris preparatory to her flight the following morning to Croydon.

Following this toast, MR. ROBERTS proposed "The Health of the Guests." In doing so he first of all mentioned some of the successes gained by the students of the Automobile Engineering College, those in particular being Messrs. Mount, Sutherland and Lorentz, who, out of 36 gaining the College Diploma, had been awarded Grade A or Honours, the latter student being transferred to the Aeronautical College and being both Senior Student and Chairman of the College Aero Club. Nineteen students passed the examination of the Institution of Automobile Engineers and 47 that of the Institute of the Motor Trade. The Silver Medal of the latter body, for the examinee gaining second place against entrants from the whole of Great Britain, was awarded to a College Student, Mr. J. G. Offord, who, incidentally, only missed the Gold Medal by less than 2 marks.

Mr. Roberts then drew attention to the number of distinguished guests present. These included:—Lt. Col. H. W. S. Outram, Wing Com. A. H. Orlebar, Sir Alliott V. Roe, Mr. F. Handley Page, Mr. E. C. Gordon England, Mr. F. T. Hearle, Mr. F. Sigrist, Flt. Lt. N. Comper, Mr. N. Norman, Mrs. Victor Bruce, Capt. Duncan Davis, Mr. Kaye Don, Capt. A. G. Lamplugh, Mr. J. H. Stieger.

With regard to the Aeronautical College, he said that 28 students would sit for the examination of the Associate Fellowship of the Royal Aeronautical Society this year. At the present time there were, we were told, 230 students in both colleges, while the capacity of the automobile side was being doubled early in the New Year. Mention was then made of the new training scheme, whereby the aeronautical students will be able to obtain first-hand practical experience in the workshops of many of the well-known aircraft-manufacturing firms. Under this scheme the students will, after a period in the College, pass to a selected firm, so that they may thus obtain actual practical experience under service conditions earlier than they would otherwise do. Details of the scheme are now being finally ratified, and when completed, should provide the finest training that can be obtained anywhere for those who wish to make aircraft engineering their life work. Not only will they receive training in the groundwork of general engineering under a carefully prepared curriculum at Chelsea, but they will, besides having practical experience at various manufacturers, also spend considerable time in the workshops which are being specially erected at Brooklands aerodrome, where all sides of aircraft maintenance and construction will be taught them.

Mr. Roberts also thanked Col. Etherton, a director of the College, for his help, and wished him success with the flight over Mount Everest which he is organising.

In conclusion, he announced that Kathleen, Countess of Drogheda, had presented a trophy for competition among the students of the Automobile College, and Mr. Mollison one for those of the Aeronautical College.

LT. COL. J. T. C. MOORE BRABAZON then replied for the guests of the Automobile College with a witty speech of the type for which he is so well known.

For example, he announced that although he knew little or nothing about the College, yet he certainly had no morbid lack of self-confidence and, being an M.P., was fully qualified to talk about a subject concerning which he had no knowledge. He then became reminiscent and recalled the days when he had worked in a motor-car works in Paris, where he had gained a fluent knowledge of the language which had since stood him in good stead during altercations with Parisian taxi drivers. Becoming more serious, Col. Moore Brabazon thought that the horse-power tax had done a lot to develop our motor industry, and that while the latter had been in a groove for many years, it was now advancing. He reminded his listeners that the Wilson gear-box was patented 30 years ago (this is the Pre-Selector gear-box which the Armstrong Siddeley firm standardised on all their cars some three years ago, despite the opposing views of the rest of the trade, and which will undoubtedly be fitted to the majority of cars within two or three years more).

Finally, he thought that the aircraft engineers had had a great deal of help from automobile engineers.

COL. THE MASTER OF SEMPILL considered that Col. Moore Brabazon, having been the first Englishman to fly, should by rights have replied to the Aeronautical side of the toast instead of himself.

He paid tribute to Capt. Davis, of Brooklands, for the help he had given the College, and pointed out that its success had been assured from the start—so much so that it was running to capacity, so to speak. Col. Sempill drew our attention to the interesting fact that Sark was still a feudal State, and that the son of *La Dame de Serk* was shortly to become a student at the Aeronautical College.

To conclude the evening Mr. Mollison expressed his pleasure at being connected with the Aeronautical College, and gave those present a few details of his wife's flight.

WOMEN PILOTS AT THE FORUM CLUB

A COMPLAINT is often made nowadays that the ideal hostess only exists in the cherished memories of those whose age enables them to look back on the good old days of the Victorian and Edwardian eras, but at a dinner given by the Aviation Group of the Forum Club to private owners and pilots on December 15, at the Club premises, 6, Grosvenor Place, Mrs. Nigel Norman proved that, though the complaint may perhaps be justified in the general, it is not true always in the particular. In a very charming little speech Mrs. Norman, who took the chair at dinner, referred to the achievements of various women pilots present, and expressed her regret that Mrs. Mollison, who was a member of the Club, had not found it possible to attend. No other woman in aviation had achieved what she had, and by her long-distance flights Mrs. Mollison had done much to uphold the supremacy of British aviation, while Capt. de Havilland, as designer of her machines, was to be congratulated. Among others present were Miss Winifred Spooner, who had landed on the shores of Italy not too conventionally attired; Mrs. Cleaver, whose greatest achievement had been her flight from New York across to the other side of America; Mrs. Alan Butler, who recorded the fastest time in the race for the King's Cup a few years back; Miss Spicer, Miss Leecock, Miss Slade, Miss Wilson, and Miss Fairley. Turning to the male section of those present, Mrs. Norman welcomed Mr. Gordon Selfridge, jun., who had such a good influence on aviation for ladies, and Mr. Mollison, who would give them the latest news of his wife's progress.

Mr. Mollison then told the company that his wife had been held up by bad weather at Beni Ounif, just south of the Atlas Mountains. He emphasised the fact that it was bad weather conditions alone which had prevented her from arriving in England as per schedule. Mr. Alan Butler congratulated Mrs. Norman on her excellent speech, and the company then retired to discuss matters of aeronautical interest.

WIRELESS EQUIPMENT FOR THE AFRICAN AIR ROUTE

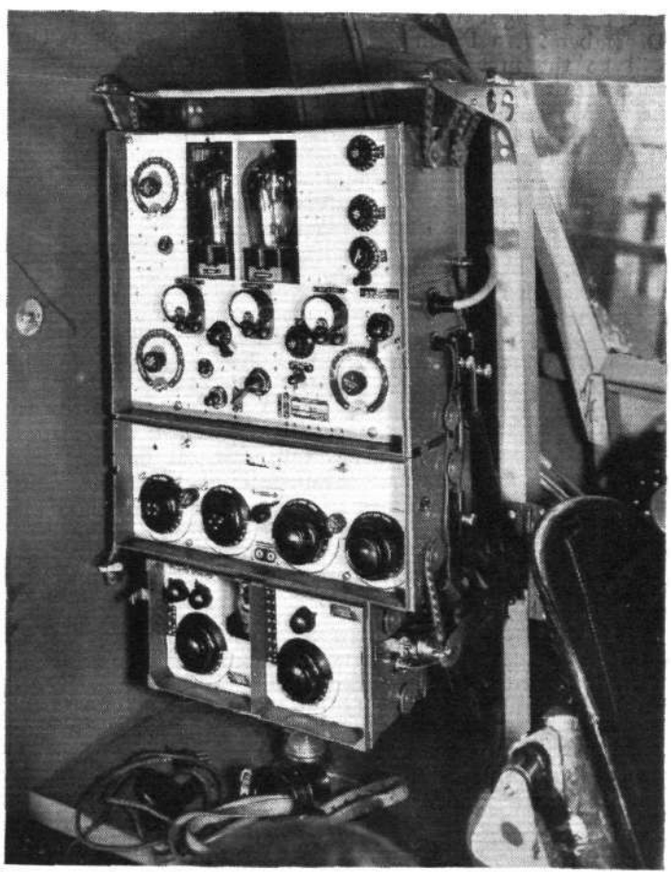
THE first four Armstrong-Whitworth "Atalanta" aircraft for the Cairo-Cape Town air route are to be equipped with Marconi apparatus. The type of equipment adopted is capable of reliable transmission and reception of telephony and telegraphy on either medium or short wavelengths, and has been specially developed by the Marconi Company, which at the beginning of this year placed its experience and resources at the disposal of Imperial Airways, Ltd., to investigate the whole question of the utility of medium and short wavelengths for air-to-ground and ground-to-air communications in Africa. The Cairo-Cape Town air route presents a difficult area for medium-wave wireless communication of a degree of efficiency comparable to that obtained on the European and Indian air routes. The African Continent, more than 4,000 miles from North to South with the Equator as its approximate centre line, is subject over vast areas to severe electrical storms which move backwards and forwards at different seasons of the year. In the majority of cases these disturbed areas cover some 1,000 miles of the air route at one time, and the intensity of the electrical disturbance is such that any medium-wave communication—even between fixed ground stations—may be rendered impossible for considerable periods. To determine the best means of ensuring efficient wireless operation under these difficult conditions, a Marconi expert carried out an extensive series of practical tests over a period of six months, flying over the route in aircraft specially fitted with experimental wireless apparatus. The utility of the tests was greatly enhanced, and their successful conclusion accelerated, by the fact that prior to the opening of the African air route a chain of powerful medium- and short-wave Marconi ground stations had been installed through the heart of the Continent, from Kampala, Uganda, to Cape Town. The tests indicated that a suitable short wavelength could be selected to provide reliable wireless communication even under conditions that entirely prevented medium-wave communications, while the difficulty of "skip distances" usually encountered in ground short-wave working was successfully overcome. Not only was it possible to establish reliable two-way ground and air communication over the entire air route, with a good safety margin always available, but on several occasions very long range communication was established. On the first test flight the Marconi engineer was in touch with the stations along half the African route, from Cairo (R.A.F. station at Heliopolis) to Nairobi, and the intermediate stations, over ranges up to more than 1,300 miles. Record long-distance two-way communication was established later with the British Post Office station at Portishead, near Bristol, while the aircraft—the Imperial Airways' flying boat *City of Swanage*—was in the air over the White Nile between Juba and Kampala, 5,000 miles away. Other long-distance contacts of this nature were also established with Norddeich, Germany, at 5,000 miles, and Coltano, Northern Italy, at 3,900 to 4,000 miles, while news messages were received from the wireless station at Miami Beach, U.S.A.

Alternative Wave Ranges

The new sets are the Type A.D.37A/38A, and comprise a combined transmitter and receiver covering the wave ranges of 40-80 metres and 500-1,000 metres. Both telephone and telegraph communication can be maintained on each wave band. The adjustment of the apparatus to the wavelength required for reliable communication in any particular circumstances has been reduced to a simple operation so that transmission and reception can be controlled by the pilot, if required. Each installation will be provided with an independent light-weight petrol engine for emergency working from the ground. The transmitter is provided with the independent drive method of frequency control, two magnifier valves being connected in parallel, one independent drive and one modulator. The valves are common to both the medium-wave and short-wave circuits. The receiver employs one screen grid high-frequency amplifier, one detector with adjustable reaction coupling, and one low-frequency magnifier. The medium-wave and short-wave ranges are each provided with its own high-frequency amplifier valve, but the detector and low-frequency magnifier valves are used for both ranges. Power for the anode and filament circuits of the valves is derived from a generator fitted with a constant-speed windmill and developing 200 milliamperes at 1,200 volts, and 16 amperes at 16 volts, for the high- and low-tension supplies respectively. Dual control and inter-communication apparatus which enables either of two persons to control the wireless or to converse with the other can be provided.

Directional Receiver Equipment

In addition to this apparatus for telephone and telegraph communication, the "Atalantas" are to be fitted with Marconi-Robinson directional receiving equipment. This takes the form of a small attachment to the A.D.38A receiver, providing a simple and convenient direction-finding service. The Marconi-Robinson system of direction finding provides what is essentially a "homing" device to enable the pilot to set his course on a known ground station. While the aircraft is on its correct course no signal will be heard from the direction finder when it is brought into operation with its special switch in its central position. The alteration of the course will cause signals to be received, and by turning the switch first to one side and then to the other and listening to the relative strengths of the signal an indication is immediately obtained of whether the aircraft is to starboard or port of its true course. The correction in course can then be made until the strength of signals is unchanged whether the switch be to the left or right, and the accuracy of the course so determined can be checked by putting the switch to the central position when, if the course is correct, no signal will be heard. In addition to the special tuner and high-frequency amplifier and switch box, which are attached to the normal aircraft receiver, the Marconi-Robinson system makes use of a single loop aerial fixed round the cabin of the aircraft, and a trailing aerial.



Marconi Type A.D. 37A/38A, combined medium and short wave transmitter and receiver and the Marconi-Robinson directional attachment, to be installed in the first four Armstrong-Whitworth "Atalanta" aircraft engaged on the Cairo-Cape Town air route.

From the Clubs

LONDON AEROPLANE CLUB DINNER

On the evening of Wednesday, December 14, the London Aeroplane Club held their annual dinner and dance at the Park Lane Hotel, Piccadilly, when about 200 people partook of an excellent repast. The organisers are to be congratulated on the informal placing of the tables round the dance floor instead of the company being seated in long serried ranks round the usual three sides of a square, thus lending itself more to good results for a photograph taken during dinner—proofs of which being submitted within two hours. Dancing was carried on until 2 a.m. and at no time was the floor too crowded, thanks to the amount of room available round the dance floor. Among those present were H.H. Prince Eugene de Ligne, Wing. Com. and Mrs. R. J. F. Barton, Capt. G. de Havilland, Capt. A. Lamplugh, R. O. J. Muntz, Maj. H. G. Travers.

FROM KUALA LUMPUR: Mr. J. R. Hibert warms up his "Gipsy" engine prior to his departure from the Kuala Lumpur Flying Club's aerodrome for Singapore during his recent flight from Heston to Australia.

NATIONAL FLYING SERVICES, HANWORTH

Bad visibility and high winds have somewhat restricted flying, though the works are inundated with work. On Wednesday Mr. Victor Smith called to collect some parachute landing flares of a new type which have lately been tested at Hanworth. On Sunday a party of Club members flew to Heston for lunch, and on Tuesday Miss Drinkwater took her tests for an Instructor's Certificate. Lady Nelson and Lady Clayton successfully carried out their height tests for "A" licences. On Tuesday, December 27, a Pylon Racing Meeting will be held. This will be the first meeting of its kind since the war and special Air Ministry permission has been obtained. Mr. Lowe Wylde's Ultra Light Aircraft, powered with the 600 c.c., 6-14 h.p. Douglas engines, will be used. Among those who will pilot the machines will be the Master of Sempill, Capt. W. L. Hope, the Hon. Mrs. Victor Bruce, Mr. C. Scott and Mr. Lowe Wylde himself. It is hoped that this meeting will be the first of many.

READING AERO CLUB

In spite of bad weather flying has been going on in a steady manner, in fact the number of hours flown show an increase on those of last year, Mr. Longden in particular has been living on the aerodrome, taking every opportunity to gain experience in cross-country work. He intends, early in the new year, to fly to Kenya accompanied by Mr. Allchurch and Mr. Courteney. Mr. Adams has also been very busy and is progressing well. Mr. A. Sims, one of the Club's oldest and most enthusiastic members, flew over to Croydon with Mr. Lawn to witness the arrival of Mrs. Mollison. During Christmas there will always be someone available to issue petrol and oil, though the School and Club will be closed from the cessation of flying on Saturday to Wednesday morning.

MAIDSTONE AERO CLUB

On Sunday, December 18, the Club held their monthly Landing Competition for the Annual Club Trophy, which was well attended in spite of the weather. The Club will be open throughout Christmas and it is hoped members will take this opportunity of putting in flying time. During the week Mr. George Goodhew and Mr. Michael Sassoon did their first solos.

KUALA LUMPUR FLYING CLUB

In view of the fact that only two machines were available during the past two months, that the weather has been extremely wet, and that the club was closed for a week that the staff might enjoy a short holiday, the total flying hours of 250 is very satisfactory; of these hours 128½ were dual instruction, 71¾ solo flying, nearly 27 cross country, and 1 night flying. During cross-country flying landings were made at Taipung, Bahau, Port Swettenham, Penang and by special permission, on the polo ground at Georgetown, this being the first occasion on which a club machine has visited Penang.

BRITISH GLIDING ASSOCIATION, LTD.

The dance which is to be held at the Portman Rooms, Baker Street, has been promoted solely for people interested in aviation and it will not be thrown open to the general public. Members of the Royal Air Force are invited in the hope that old friends will be drawn together. The price of tickets will be 10s. double and can be obtained from the British Gliding Association, 19, Berkeley Street, W.1.

LONDON GLIDING CLUB

A course of instruction in gliding will be carried out by Herr Wolf Hirth at the grounds of the London Gliding Club from December 26 to January 4. The course will be open to both members and non-members of the Club; the fees will range from £2 2s. for two days to £7 7s. for the whole course, which will not include accommodation but will include lunch and tea daily, full liability for damage of machines, and third-party risks. Herr Hirth's object is to teach the English pilots how to make full use of rising currents due to cloud formations or thermal influences. The London Gliding Club is gradually equipping itself with the most efficient gliders, and Flt.-Lt. Buxton owns the *Scud II*, which is a British product, small and light, giving a very high aerodynamic efficiency.

THE BRADFORD AND COUNTY GLIDING CLUB

In spite of the short hours of daylight and unfavourable weather conditions, as in previous years flying meetings are being held throughout the winter, and are being very well attended. On Sunday, December 4, three machines were out, Reynard doing training and "B" certificate work on the west slope, the Intermediate doing soaring practice on the same slope and Holdsworth flying his sailplane. Sunday, December 11, with its biting east wind, only saw two machines rigged, but there was a good attendance of blue-nosed but enthusiastic members.

Training has proceeded regularly throughout the year, eight "A" certificates and three "B" certificates having been obtained since May 1, 1932. Three more members have completed all their preliminary qualifying flights for the "B" certificate, so that there is distinct hope of adding to the above figures before the end of the year.

Equipment now includes three Primary training machines and one Intermediate as club machines, and one privately-owned sailplane. In course of construction there are also a Hols der Teufel sailplane for the club, and a large two-seater for private ownership. Both these machines are expected to be completed by May 1 next.

Really enthusiastic members are the club's greatest asset, and more of these is the club's greatest need.

Airport News

CROYDON

ADVERSE weather conditions, chiefly fog, have caused considerable delay and inconvenience to those engaged in flying during last week, which at Croydon has meant days of waiting to welcome Mrs. Mollison and to bid farewell to Mr. Victor Smith, both of whom have been harassed by the weather.

On Tuesday, the only arrival of interest at the airport was that of Mr. Armour, who had returned from Geneva in the "Gull." He made the trip in good time, and expressed his complete satisfaction with the high performance of the machine.

Throughout the whole of the day on Wednesday workmen were busy erecting a stand for the official welcome of Mrs. Mollison. Arrangements were also made by the B.B.C. to give a running commentary of the event.

Sir John Simon arrived on Thursday in the Imperial Airways air liner from Paris shortly after 11 a.m., and was met by Lady Simon.

At 4 p.m. Mr. Smith started on his record attempt, but weather conditions compelled him to land at St. Malo.

News reached Croydon on Thursday morning that Mrs. Mollison had left North Africa on a direct flight to Croydon. As time wore on excitement began to grow and everyone became anxious. In France they were experiencing very bad weather; Le Bourget was unreachable owing to fog and Beauvais was used as a substitute port. All the air liners bound for Paris landed there. The French Marseilles service connected at Beauvais for London, instead of Paris. On account of these weather conditions, it was thought that Mrs. Mollison would use the west coast route via Bordeaux. Shortly after 6 o'clock a message was received by wireless stating that Mrs. Mollison was still at Beni Ounif and would not proceed until the following day—the disappointed crowds slowly moved away and Croydon closed down for the night.

Friday was even less favourable. Fog on the London-Paris route caused delay to several air liners. Two machines which left Croydon in the morning were compelled to return. Imperial Airways 9 a.m. service to Paris was cancelled and no Imperial Airways machines left Paris for Croydon.

A French air liner carrying eight passengers which left Croydon at 1 o'clock began to lose height just after taking off, and landed in a field adjoining the aerodrome. No damage was done to the machine, and the passengers were transferred to another plane, which left half an hour later. Le Bourget, the Paris airport, was unreachable owing to fog, and Beauvais was again used as a substitute port. A dense and unpenetratable fog existed from Marseilles to Abbeville, and at 10 a.m. two Air Union air liners which connected with a homeward-bound P. & O. boat at Marseilles left there, each with a full complement of passengers, and were forced to follow a diverted route. They flew to Dijon, where they refuelled, flying to London via Calais, arriving at Croydon shortly after 5 p.m.

Mrs. Mollison flew from Beni Ounif to Oran, but was unable to proceed any further owing to the weather in France.

The total number of passengers for the week was 910; freight, 48 tons 16 cwt. HORATIUS.

FROM HESTON

MONDAY, December 12, was another day of thick mist, and the only arrival from abroad was Mr. R. L. Malone, who came from Cologne, via Brussels, in his "Spartan."

On Wednesday, December 14, three new pupils commenced instruction and one—Mr. J. H. A. Whitehouse—carried out a most successful first solo. Monsieur Bluestein left for Paris in Caudron F-ALUS, with one passenger. This machine had undergone extensive repairs at Airwork, Ltd. branch as Bristol.

There were numerous visitors by air on Friday, December 16, among them being Mr. Fairweather on Mr. C. S. Napier's "Avian"; Capt. Percival on his "Gull"; the "Bellanca" of the Hon. F. E. Guest, and "Moth" G-AALT from Phillips & Powis, of Reading. Banco sent off the Comper "Swift" in great haste with an urgent message.

Lady Marjorie Dalrymple Hamilton made her first solo flight on Saturday, December 17, watched by a very critical crowd, who were loud in their praises of her performance. One of the many visitors was Mr. Lane, of the Indian A.I.D., who was much interested in the organisation. Another was Mr. A. H. Hamilton-Gordon, one of the first Heston Club members, who, now stationed at the British Legation, Moscow, visited the aerodrome during a two weeks' leave of absence. Others included Miss Leathart, of the Newcastle Flying Club; Miss Spooner and Mr. MacPherson, from Leicester; Mr. J. K. V. Watson—with Mr. Hunter; Flt. Lt. R. Bentley, of Shell-Mex B.P.; Mr. and Mrs. Crammond; Mr. Ince with his "Widgeon"; Mr. Derwent Hall Caine; Miss Paddy Naismith; while the visiting machines included eight "Puss Moths," 12 "Moths," four "Avians," one Comper "Swift," two Klemms, one "Widgeon," one "Fox Moth" and one Avro "Cadet."

Herr Kirsch arrived from Paris in the Hirth Klemm D.2328 and Mr. Samuelson left for a Continental tour in a "Tiger Moth" ("Gipsy III"). Herr Kirsch's machine created great interest and was tried out by many other pilots. Two new pupils joined the Flying School on this day. Quite a fleet of machines left Heston for Croydon to join in the welcome to Miss Amy Johnson.

Heston takes this opportunity of wishing all their friends and acquaintances of the flying fraternity a Merry Xmas and a Prosperous and Happy New Year.

S S S S S S

Aeronautical Research Committee Appointment

THE Air Ministry announces: The Marquess of Londonderry, Secretary of State for Air, has appointed Mr. H. T. Tizard, C.B., A.F.C., F.R.S., to be Chairman of the Aeronautical Research Committee in succession to Sir R. T. Glazebrook, K.C.B., F.R.S., with effect from April 1, 1933. Sir Richard Glazebrook was appointed Chairman of the Advisory Committee for Aeronautics when it was established by Mr. Asquith as long ago as 1909, and continued in this office until that body was reconstituted in 1920 as the Aeronautical Research Committee, when he was again chosen as Chairman of the new body. Sir Richard will thus have been in succession Chairman of the two Committees responsible for Aeronautical Research for a continuous period of nearly 24 years, including the period of the Great War with its special responsibilities and rapid intensive development of aeronautical technique. He has throughout taken a leading part in all phases of aeronautical research, and has rendered distinguished services to science and aviation.

Mr. H. T. Tizard, who is succeeding Sir Richard Glazebrook as Chairman, has been Rector of the Imperial College of Science and Technology since 1929. He is a member of the Aeronautical Research Committee and is chairman of several of the sub-committees and panels. Born in 1885, Mr. Tizard served as a pilot in the Royal Flying Corps during the war and later became the first Chief Experimental Officer at the Aeroplane Experimental Establishment at Martlesham Heath. In 1918 he was appointed to be Assistant Controller, Experiments and Research, Royal Air Force, and subsequently was Secretary of the Department of Scientific and Industrial Research. Mr. Tizard is a Fellow of Oriel College, Oxford, and also a Fellow of the Royal Society. He was awarded the Air Force Cross in 1918 in recognition of valuable flying services, and was created a C.B. in 1927.

Airisms from the Four Winds

Wright Bros. 29th Anniversary

THE following cabled message has been sent to Mr. Orville Wright by Mr. C. R. Fairey, on behalf of the Royal Aeronautical Society:—"I am sending you on behalf of the Council and all members of the Society their very sincere congratulations on the twenty-ninth anniversary of the first power-driven controlled flights made by you and your distinguished brother on December 17, 1903. The results of those flights are changing the whole outlook of mankind by bringing the peoples of the earth in closer contact and so leading to that better understanding of national and international problems which will bring a final and lasting peace to the world." An illustration of the Wright Memorial, erected at Kitty Hawk, is given on this page.

A Magnificent Feat

SELDOM are we ever likely to hear of a finer display of courageous skill than that shown by Mr. E. C. Pellens, a pilot flying on the K.L.M. route to Batavia. Not long ago he was caught in an inscipient tornado when he had been flying for about an hour, most of which was in clouds, out from Bangkok. This tornado caused the machine to fall first into a left-handed spin and then right-handed before the pilot was able to regain control. When he did so, however, the force of the atmospheric disturbances tore off both his ailerons. He managed to get the machine back on an even keel and, presumably by using his two wing engines—he was flying a Fokker with three Bristol "Titan" engines—he continued the flight to Kohlak, where he landed the machine safely after a gentle turn of very large radius to get into wind. This mishap was not allowed to delay the mail and another Fokker was sent from Java the same day, this relief made up the time lost and arrived in Amsterdam dead on time. For his courage and skill Mr. Pellens will receive the gold watch which is presented annually by the British Aviation Insurance Co., Ltd., for the most meritorious performance of this kind.

M. Santos Dumont

THE body of M. Santos Dumont, the early pioneer of aviation, after having lain in state in the Cathedral of Sao Paulo for two days, was brought to Rio de Janeiro. His remains will finally be laid to rest in the cemetery of St. John the Baptist and a public holiday has been proclaimed for the day of internment.

Lord Wakefield's Generosity

NOT only has aviation to be thankful that Lord Wakefield escaped death in the railway accident at Sevenoaks five years ago—as he related from the chair at the annual dinner of the Poplar Hospital at the Savoy on December 14—but the many other outlets for his generosity and sympathetic interest, as indicated by his donation at the above function of £5,000 to the Poplar Hospital.

THE WRIGHT MEMORIAL: This impressive granite monument has been erected at Kitty Hawk, N.C., where Wilbur and Orville Wright made the first power-driven flights in 1903.

Autogiro Activity

THE total number of Autogiro hours flown throughout the world during 1932 amounted to 13,276. There are approximately 80 Autogiros flying daily in all parts of the world, as widely distributed as United States, South and Central America, Spain, Japan, Germany, France and Great Britain. The new unofficial world's altitude record for Autogiros, viz., 21,500 ft., was established by an American Autogiro pilot, Capt. L. A. Yancey, on September 25, at East Boston Air Port. The machine was a 300 h.p. Wright "Whirlwind" Autogiro.

THE PRINCE'S NEW MACHINE: As announced last week, His Royal Highness the Prince of Wales has recently ordered a "Fox Moth" ("Gipsy Major") from the De Havilland Co. The machine is of the King's Cup type, and is finished in the Royal blue and dark red colours of the Household Brigade. Navigation lights are fitted on top of the wing and under the fuselage, and a small wireless set (Marconi) is fitted so that the pilot can communicate with ground stations.

THE ROYAL AIR FORCE

London Gazette, December 13, 1932.

General Duties Branch

The following Pilot Officers are promoted to rank of Flying Officer :—R. C. Richmond (Sept. 29) ; J. D. Miller (Oct. 10) ; P. H. Heygate (Oct. 11) ; F. W. C. Shute (Nov. 10) ; R. H. Preller (Nov. 12).

Flying Officer (now Flt. Lt.) K. S. Brake is restored to full pay from half-pay (Nov. 28) ; Wing Com. E. L. Tomkinson, D.S.O., A.F.C., is seconded for duty as Air Adviser to the Greek Government and is granted the acting rank of Group Captain whilst so employed (Dec. 1) ; Group Capt. M. Spicer is placed on retired list (Nov. 30) ; Flying Officer F. Miller D.S.M., is placed on retired list (Dec. 12) ; Flt. Lt. J. E. L. Drabble is placed on retired list at his own request (Dec. 14) ; Flt. Lt. G. F. Moody is placed on retired list at his own request (Dec. 14). The following Flying Officers are transferred to Reserve Class A :—H. G. Hamilton J. D. Richardson, F. L. Truman (Dec. 9) ; W. F. Murray (Dec. 13) ; G. F. Hales (Dec. 14).

Pilot Officer S. W. F. Smyth relinquishes his short service commn. on account of ill-health (Dec. 2) ; Pilot Officer on probation A. H. Fox relinquishes his short service commn. on account of ill-health (Dec. 10) ; Flying Officer D. G. Singleton relinquishes his short service commn. on account of ill-health (Dec. 14).

Medical Branch

The short service commn. granted to F. H. Peterson, M.C., M.C.P., and S., is ante-dated to Aug. 5, 1931.

ROYAL AIR FORCE RESERVE
RESERVE OF AIR FORCE OFFICERS

General Duties Branch

Flight Lieutenant H. Bligh is transferred from Class A to Class C (Dec. 5). The following Flying Officers relinquish their commns. on completion of service :—L. F. Ashley (Dec. 9) ; A. G. Hill (Dec. 13).

AUXILIARY AIR FORCE

General Duties Branch

No. 605 (COUNTY OF WARWICK) (BOMBER) SQUADRON.—Flying Officer R. Rendle is transferred to No. 604 (County of Middlesex) (Bomber) Squadron (Nov. 29).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified :—

General Duties Branch

Wing Commander (Acting Group Captain) E. L. Tomkinson, D.S.O., A.F.C., to Special Duty List, whilst seconded for duty as Air Adviser to the Greek Government, 1.12.32.

Squadron Leader L. O. Brown, D.S.C., A.F.C., to Aircraft Depot, India, Karachi, 10.11.32, for Administrative duties, *vice* Sqd. Ldr. P. H. Cummings, D.F.C.

Flight Lieutenant A. B. Addison, to No. 100 (B) Sqdn., Donibristle, 30.11.32.

Flying Officers : K. S. Brake, to R.A.F. Depot, Uxbridge, 28.11.32. W. R. A. Matheson, to No. 500 (Co. of Kent) (B) Sqdn., Manston, 2.12.32. A. J. McDougall, to No. 503 (Co. of Lincs.) (B) Sqdn., Waddington, 2.12.32. N. P. Samuels, to No. 500 (Co. of Kent (B) Sqdn., Manston, 2.12.32.

Pilot Officer A. D. Isemonger, to No. 60 (B) Sqdn., Kohat, India, 2.11.32.

Stores Branch

Flying Officer E. G. Northway, M.B.E., to Aircraft Depot, India, Karachi, 15.11.32.

December Passing Out Inspection at Cranwell

The passing out inspection of cadets from the Royal Air Force College, Cranwell, was carried out by Air Vice-Marshall R. H. Clarke-Hall, C.M.G., D.S.O., Air Officer Commanding Coastal Area. The report of the Commandant states that the present strength of the College is 127 Flight Cadets, and 612 have graduated since the formation of the College. The standard of work, on the whole, seems to be well up to the average, and in aeronautical engineering slightly above the average. In sport the College has shown its usual keenness, the Cross County team won five out of six matches, and the Rugby Football fifteen won eleven out of twenty matches, the games against Woolwich and Sandhurst were both lost, but only after hard games. There seems to have been an unusual large number of hospital cases, which is difficult to explain, though a large proportion of them were the result of accidents incurred during organised games. The Sword of Honour was awarded to Flight-Cadet Under-Officer R. V. Rolph. Prize for flight cadet of senior term obtaining highest marks in humanistic subjects to Flight Cadet Corporal D. S. Kite. Prize for flight cadet in senior term obtaining highest marks in aeronautical engineering to Flight-Cadet G. C. Pope. Abdy Gerrard Fellows Memorial Prize to Flight-Cadet R. G. Stone. J. A. Chance Memorial Prize to Flight-Cadet J. C. Pope. R. M. Groves Memorial Prize to Flight-Cadet Sergeant E. B. C. Davies.

FLYING BOATS IN THE PERSIAN GULF

ON Wednesday, December 14, Sqd. Ldr. G. W. Bentley, D.F.C., read a most interesting paper before the Royal Central Asian Society in Burlington House. Air Marshal Sir Robert Brooke-Popham was in the chair. The lecturer started by explaining the strategic and commercial importance of the Persian Gulf as an air route, and then went on to give an account of the work of No. 203 (Flying Boat) Squadron from the time it arrived at Basra with three "Southampton" flying boats. These have now been exchanged for "Rangoons." At first the squadron knew practically nothing about the Gulf, and its job was to establish an air route for all types of R.A.F. aircraft. It had to establish refuelling bases for seaplanes and also for landplanes, to select mooring bases for the former and aerodromes for the latter, to see that the stages were not too long, and that the bases were safe in both the aeronautical and the political sense. He said that the Arabian coast was the best for flying boats, as there was any amount of sheltered water to be found. He described the various sections of the route along that coast (which were described in FLIGHT of September 30), and gave some account of the various sheikhs with whom negotiations had to be conducted. In these negotiations the political officers, the sloops of the Royal Navy, and the R.A.F. squadron worked together, and the lecturer paid a handsome tribute to the first two mentioned.

One of the chief tasks of the squadron was to gain a thorough knowledge of the Gulf, and to survey parts which had never been surveyed before. Many patches of calm water were found on the landward side of shoals, which were very useful to flying boats, but of no use to any other form of craft. The boats of the squadron had visited practically every town and village along the Arabian coast, and had made friends everywhere. Many sheikhs and local notabilities had been given flights, and the political officers also used the flying boats when touring. The medical officer of the squadron would also come with the boats and treat the sick in the villages visited.

The humid, hot climate of the Gulf was, he said, well known. He gave some details of the weather conditions, saying that the N.W. wind, called the Shumal, sometimes carried the sand from Iraq to Karachi. The sand storms, however, rarely interfered with the work of the flying boats.

If there was a real necessity for them to get from one place to another, they would usually get there, although flying through the sand storms was not pleasant. The lecturer also described some of the work done by the squadron in preparing the Arabian coast route for the machines of Imperial Airways, who first contemplated using flying boats, but later on decided to use landplanes. The photographs shown on the screen tempted the audience to risk the climate and undertake a voyage by air down this interesting part of the world.

The R.A.F. Club and Xmas

THE Royal Air Force Club will be closed from 2.30 p.m. on Tuesday, December 27, until 12.30 p.m. on Wednesday, December 28 (for the purpose of holding the Annual Staff Dance), except in so far as affects bedroom accommodation (with breakfasts only) to residents and members who have engaged bedrooms prior to noon on December 27. The Club will remain open during the Christmas holidays.

The Marine Landing Apron

IT is stated that the French Navy is about to experiment with the landing apron for marine aircraft. This device consists of an apron, partially stiffened, which is towed at the stern of a ship, and on it seaplanes can either take off or land. It is to be tested on the seaplane tender *Commandant Teste*. Experiments with a similar scheme have been made before both by Great Britain and Germany.

MRS. MOLLISON'S GREAT FLIGHT.

(*Concluded from page* 1208)

from Sir John Siddeley in which he expressed regret at his inability to be present at the Luncheon and desired his hearty congratulations to be conveyed to Mrs. Mollison on her wonderful feat and to the De Havilland Aircraft Co. on their share of this great success. Mr. Fairey said that the Society had entertained many distinguished guests and on behalf of the R.Ae.C. and the S.B.A.C., he had great pleasure in extending their very hearty congratulations and sincerest thanks to a very gallant lady who insisted upon keeping up the prestige of British aviation at a time when some people are saying aviation should not exist.

It was not the first time, he said, that Amy, as she was affectionately known, had received the congratulations of her countrymen on her aviation achievements, but it was the first occasion on which these three societies had collaborated to do honour to a single lady guest. Let us put on record, he said, what Amy has done. She has flown to the Cape in 4 days, 6 hours, 54 minutes and flown back in 7 days, 7 hours, 5 minutes, and thereby has broken the record each way. Among the many things which have been done in aviation lately, we appreciation what a solo flight of this kind means. She has conquered all the hardships of these pioneer journeys with dauntless courage and skill, which British aviation has brought her. The cause of aviation has never needed moral support quite so much as at the present time. Nothing, he said, has been so much talked about than aviation, but never was there such muddled talk and misguided talk about it than today. Military aviation was the scapegoat of disarmament and civil aviation was to to be put under international control. We seemed to be going through a period of retrogression, a period of re-action. In Mrs. Mollison, he said we had a good omen. The new generation would have a better interest in these things and would know how to develop the resources that applied science had given and not to act against them. In conclusion, he said, that as both Amy and her husband were so fond of the air, there should be every prospect of later on their being blessed with an equally air-loving heir.

Lord Gorell (Chairman of the Royal Aero Club) said that everybody was of one mind and he could only confirm Mr. Fairey's remarks. He said, "we are congratulating not only an individual, but also British aircraft manufacture." He felt it was a great privilege to be the first hosts of Mr. and Mrs. Mollison and might take up very briefly what Mr. Fairey said in his concluding remarks, that with parents of this kind on each side, something very remarkable may happen in the future.

Mr. Handley Page, in joining in the praise of their chief guest, read a telegram from the employees of the De Havilland Aircraft Co. as follows :—"Please convey to Mrs. Mollison an expression of our great admiration of her courage and wonderful airmanship. We are proud to have been associated with her great achievement." In the ordinary way, Mr. Handley Page said, everybody in the street had been saying that this flight had been organised for years, but he said, I am assured by Capt. De Havilland that the engine was only given two hours bench test and the machine one hour, before Mrs. Mollison took delivery of it. The aeroplane, he said, was coming into its proper place, where the steamship and the railway was, namely, the means of locomotion from one place to another. Only three years ago, he said, we were celebrating Bert Hinkler's stupendous flight to Australia, but this in less than three years was followed up by an ordinary flight by Imperial Airways. We might expect that these great pioneer flights, such as Mrs. Mollison had done at the present time, all England would be doing tomorrow.

Mrs. Mollison, in reply, said that she had many times been asked if she had ever felt terrified whilst flying. Omitting her answer she said that she was then desperately terrified. First of all, she continued, I want to say how extremely honoured I am that you should have turned up to see me today and how much I appreciate this compliment. Any hardships were amply compensated for by this moment as she stood amongst so many notable people. There was such a lot to say, that she did not know where to start, but the first and foremost thing was undoubtedly the wonderful machine and engine, without which nothing could have been done. It was perfectly true her machine was a brand new one with a new Gipsy Major engine which had never before done a long distance flight, and her flight had been a really exacting test in which both had come through with flying colours. She had done 13,000 miles and had only cleaned the filters and plugs at Cape Town. The machine had, apart from the engine, stood up to the flight remarkably well. At the end of its flight after coming through every conceivable stage it was left in the open two days and nights simply pegged down, with the front of the engine covered over, through a gale of 120 kil. an hour besides passing through snow storms and sand storms. The average cruising speed was 120 m.h.p. for the return journey.

When I got to Cape Town, she said, I wondered whether I would come back by boat, but decided it would be most ignominious to do so. I carried two mascots, Mrs. Mollison continued, one of St. Christopher, on the dashboard and the other one of Lord Wakefield, my "fairy godfather." I also carried a telegram from Lord Wakefield which ran, "I cannot give you my approval, but I can give you my blessing and good wishes." When I left London I had been assured by the Air Ministry and the Automobile Association that November was a good month for flying to the Cape, but nevertheless I flew into bad weather along the West Coast route. By far the worst weather was on the West Coast between Los Angeles and Douala, in the Cameroons and I was forced down at Benguella (Portuguese W. Africa). One feels, she said, such a feeling of utter desolation in the Sahara, but the engine never missed a revolution. I encountered, she said, the best of weather over the Sahara and saw the most wonderful sunrise I have ever seen in my life. I had to fly over hundreds of miles of jungle and over the Kalahari Desert. In conclusion, she said, I do know that along the West Coast route there will have to be much more ground information and meteorological information available. Douala aerodrome was by far the best marked aerodrome the whole of the way, but was much too small. She again thanked all of those present for the splendid reception which she had that day been accorded.

Amongst those accepting invitations were :—Lieutenant de Vaisseau Albertas, Major T. M. Barlow, Capt. C. D. Barnard, Mr. F. G. L. Bertram, Mr. R. Blackburn, Mr. J. S. Buchanan, Major G. P. Bulman, Air Marshal Sir H. R. M. Brooke-Popham, Capt. G. De Havilland, Mr. E. C. Gordon England, Capt. F. Entwistle, Mr. A. H. R. Fedden, Capt. E. T. della Floresta, Mr. H. R. Gillman, Lord Gorell, Mr. C. G. Grey, Air Com. The Hon. F. E. Guest, Major F. B. Halford, Sqd. Ldr. H. L. J. Hinkler, Capt. A. G. Lamplugh, Air Vice-Marshal A. M. Longmore, Sir Francis K. McClean, Mr. J. A. Mollison, Commander G. D. Murray, U.S.N., Col. H. Nerinx, Col. M. O'Gorman, Mr. F. Handley Page, Mr. H. E. Perrin, Capt. J. Laurence Pritchard, Air Chief Marshal Sir John M. Salmond, Major M. F. Scanlon, Herr A. H. Van Scherpenberg, Col. The Master of Sempill, Lt. Col. F. C. Shelmerdine, Mr. H. O. Short, Mr. A. F. Sidgreaves, Dr. G. C. Simpson, Mr. Stanley Spooner, Major H. G. Travers, Sir Alliott Verdon-Roe, Air Vice-Marshal Sir Veyll Vyvyan, Mr. H. T. Vane, Lord Wakefield of Hythe, Mr. H. E. Wimperis.

The Making of Aerodromes

PROGRESS in the Aviation Department of the En-Tout-Cas Co. during the past year has been steady, and several aerodrome contracts have been successfully completed, notably that of the R.A.F. aerodrome extension at Sutton Bridge, Lincs. That the company has given satisfaction and enjoys the confidence of the Air Ministry for its work of aerodrome levelling and general surface construction is expressed in the placing of another contract, this being for the purpose of constructing a new landing ground of approximately 120 acres in area at the R.A.F. station at Lee-on-Solent.

Amongst contracts received and fulfilled from private aerodromes was one for the construction of an open-air swimming bath at Mr. W. Lindsay Everard's aerodrome at Ratcliffe. This job resulted in converting the unsightly pond in front of the main hangars and office buildings. The brickwork and concrete swimming bath has a depth of 6 ft. at the deep end and a shallower end for children, and during the summer it was populated by large parties from the Club.

Mr. Everard has placed another contract with the company. This is for the construction of a small control tower. Ratcliffe, having its buildings in the centre of the aerodrome, which thus form an island, has been difficult for officials controlling air races and pageants to obtain the unrestricted view of the whole landing area, which is always necessary. This fault will be remedied when the tower is raised. Loud-speaker and signalling equipment will also be installed. The tower will be placed centrally amidst the buildings, and will only be of sufficient height to ensure the necessary freedom of view. This work should be completed some time in January. The general economy campaign that has misguidedly prevailed throughout the country has undoubtedly had its restricted effect upon aerodrome schemes, and the En-Tout-Cas Co. rightly feel that in normal economic conditions they would have been favoured with other important contracts. They speak of two large aerodrome schemes that would have been completed by them had not economy intervened, but in spite of the times inquiries are being received, and the company feel certain that in the near future they will be very busy with aerodrome construction. They have been sufficiently optimistic to place large orders for new plant and tools.

K.L.G. Again

THE performance of the M.G. Midget in exceeding a speed of 2 miles per minute in the hands of Mr. G. E. T. Eyston on the Montlhery track is another testimony to K.L.G. plugs. The extent to which these plugs were stressed in the 7-h.p. engine travelling at 120 m.p.h. can readily be appreciated, and again testifies to their capacity for withstanding the lesser stresses met with in aero engines.

PUBLICATIONS RECEIVED

The Story of the Airship. By Hugh Allen. The Goodyear Tyre and Rubber Co. (Gt. Britain), Ltd., Chelsea Wharf, Lots Road, London, S.W. 10. Price 3*s*. 6*d*. Post free 3*s*. 9*d*.

Chronicles of Icarus. By W. E. Hughes. No. 3. British Air Posts 1850-3. No. 5. 1870-1. W. E. Hughes, "Icarus," Penshurst Gardens, Edgware.

The Journal of the Royal Aeronautical Society. December 1932. No. 264. The Royal Aeronautical Society, 7, Albemarle Street, London, W.1. Price 3*s*. 6*d*.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations : Cyl. = cylinder; i.c. = internal combustion; m. = motors.

(The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1931

Published December 22, 1932

11,280. J. SQUIRES. Screw-propeller blades and method of manufacturing same. (383,958.)

33,887. H. HEIN. Method and apparatus for hauling aircraft upon watercraft. (384,087.)

35,051. A. T. S. Co., LTD., and J. D. NORTH. Welded structures for wings and like members for aircraft. (384,095).

APPLIED FOR IN 1932

Published December 22, 1932

10,605. W. KIDDE & Co., INC. Emergency flotation equipment for aircraft. (383,964.)